

***United States Court of Appeals  
for the Second Circuit***



**PETITIONER'S  
BRIEF**





74-1830

**74-2246**

IN THE UNITED STATES COURT OF APPEALS  
FOR THE SECOND CIRCUIT

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NO. 74-2246

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CALIFORNIA & HAWAIIAN SUGAR COMPANY,  
Petitioner,

v.

ENVIRONMENTAL PROTECTION AGENCY,  
Respondent.

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On Petition for Review of Action of the  
Administrator of the Environmental  
Protection Agency

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BRIEF FOR PETITIONER CALIFORNIA  
AND HAWAIIAN SUGAR COMPANY

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## I. THE ISSUES

This is a consolidated action consisting of petitions originally filed by four crystalline sugar refining companies in three separate Courts of Appeal. Each petition requests review of the action of Russell E. Train, Administrator of the Environmental Protection Agency ("EPA"), in promulgating effluent limitation regulations for existing refineries and performance and pretreatment standards for new refineries in the cane sugar refining subcategory of point sources. (39 Fed. Reg. 10522-28 (March 20, 1974), amending 40 C.F.R. Chapter I, Subchapter N, Part 409; R. 3100-07). The regulations were purportedly issued pursuant to Sections 301, 304(b) and (c), 306(a) and (b), and 307(c) of the Federal Water Pollution Control Act, as amended (the "Act").<sup>1/</sup>

The issues can be simply stated as follows:

1. May EPA issue Section 304 effluent limitation guidelines as regulations pursuant to Section 301 of the Act? If not, does this Court have jurisdiction to review the regulations in question?

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<sup>1/</sup> 33 U.S.C. Sections 1311, 1314(b) and (c), 1316(a) and (b), 1317(c). All citations to the Act will refer to the original section numbers rather than to those appearing in the United States Code. Correlations are provided in the Table of Authorities, supra.

2. Did EPA fail to comply with section 304 of the Act by not specifying the factors to be taken into account in designating the treatment technology to be applied to point sources and in issuing single number limitations as opposed to ranges of limitations?

3. Can EPA base effluent limitation regulations for 1977 and 1983 on transferable treatment technology which has not been shown to be capable of achieving the actual limitations established for crystalline cane sugar refineries?

4. Did EPA give adequate consideration to the economic costs and adverse environmental effects associated with the treatment technology upon which the effluent limitations are based?

In a separate brief, petitioner Amstar Corporation asks this Court to direct EPA to consider use of the logarithmic average method for computing monthly averages of daily discharge levels, and to have EPA reconsider its cost-benefit justification for the designated 1983 technology in the light of significant reductions obtained by present technology in recent years. California and Hawaiian Sugar Company ("C&H") joins in these contentions.



## II. STATEMENT OF FACTS

### A. Interest of California and Hawaiian Sugar Company

Petitioner C&H is an agricultural cooperative marketing association which acts as the refining and marketing agent for its owners, producers of raw sugar in Hawaii. C&H operates two cane sugar refineries, one at Crockett, California, and the other at Aiea, Oahu, Hawaii. The Crockett refinery is the world's largest, with a potential production capacity of 4,000 tons of refined sugar per day. The Aiea refinery has a capacity of 200 tons per day and supplies the Hawaiian Islands with refined white sugar. (R. 2774.) Both refineries are affected by the regulations here under review.

### B. Statutory Framework

The Federal Water Pollution Control Act Amendments of 1972 established a comprehensive program designed to eliminate discharges of pollutants from all point sources throughout the nation by 1985. (Section 101(a)(1).) The program is to be implemented chiefly through a permit procedure operated jointly by the States and EPA. The basic structure of this program is contained in three major provisions, Sections 301, 304 and 402.

Pursuant to Section 301, all effluent discharges are prohibited except as permitted under the terms of the Act. Effluent limitations for each point source are to be contained in and enforced through permits issued under Section 402 of the Act. EPA is directed to transfer authority for issuance of permits to the States upon their application and certification by EPA that the State program meets the Act's requirements. (Section 402(b)-(f).)

Section 301(b) directs that certain objectives be achieved in terms of implementation of waste treatment technology within specified time periods. These objectives are defined as effluent limitations which require industry application of the "best practicable control technology currently available" ("BPT") by July 1, 1977, and application of the "best available technology economically achievable" ("BAT") by July 1, 1983.

Section 301 also states that EPA is to develop these levels of treatment technology under the terms of Section 304(b). That provision authorizes EPA to promulgate "guideline regulations" for the purpose of adopting or revising effluent limitations applicable within the two time periods addressed by Section 301. These guidelines have two major functions. First, EPA is to identify "the degree of effluent reduction attainable" within classes and categories



of point sources through application of "best practicable" and "best available" technology. Then EPA is to specify factors to be taken into account in determining the control measures and practices to be applied to point sources within classes or categories of point sources (Sec. 304(b)(1)(B)) for 1977 and to be applied to "any point source" within such categories or classes (Sec. 304(b)(2)(B)) for 1983.

The two provisions continue by listing six factors which must be considered in determining the levels of technology to be applied as BPT and BAT within classes and categories of point sources: the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, non-water quality environmental impact (including energy requirements), and the cost of achieving such effluent reduction. Additionally, the Administrator may specify "such other factors" as he deems appropriate.

The same process is to be employed in reviewing and revising the effluent limitations which, under Section 301(d), is to occur at least every five years, the maximum life of each permit.

C. Administrative Proceedings

On August 6, 1973, EPA issued an "Advance Notice of Public Review Procedures" (38 Fed.Reg. 21202; R. 2478-83) which set forth the methodology to be used by the agency in establishing effluent limitations under the Act for distinct industrial subcategories. Briefly, for each category EPA would contract with private consultants to conduct studies of waste water flows, pollutant constituents, and treatment technologies; the results of these studies would be reviewed by EPA and issued as "development documents." Separate analyses were to be completed on the economic impact of alternative control strategies. EPA then would evaluate the data to identify BPT and BAT for each subcategory and to establish effluent limitations to be achieved by 1977 and 1983.

The draft Development Document for the cane sugar refining subcategory (R. 1-198) was completed in the summer of 1973 by Environmental Science and Engineering, Inc. of Gainesville, Florida. Public comments were received on the draft Development Document (R. 2289-2477). The draft was supplemented with compilations of water usage and cost data collected purportedly from individual refineries (R. 199-2288). An economic analysis prepared by Messrs. David and Buzenberg of Development Planning and Research



Associates was subsequently released in the fall of 1973 (R. 2484-2592).

Proposed effluent guidelines and standards were promulgated by EPA on December 7, 1973 (38 Fed. Reg. 33846; R. 2738-64). A second Development Document, dated December 1973, was also released (R. 2593-2737). The proposed regulations identified 5-day biological oxygen demand ("BOD")<sup>2/</sup> and total suspended solids ("TSS") as the two chief pollutants in the waste streams from refineries (id. at 59-62; R. 2659-62). A figure of 30 milligrams per liter ("mg/l") was established as the basis for the effluent limitation for BOD and 40 mg/l for TSS to be achieved by crystalline refinery process wastes by July 1, 1977. The concentration figures for both wastes were to be reduced to 18 and 15 mg/l, respectively, by July 1, 1983 (id. at 79-80; R. 2679-80; 38 Fed. Reg. 33846, 33850-51 (Dec. 7, 1973)).

The December 1973 Development Document also discussed specific control and treatment alternatives which it contended were available to achieve effluent reductions (pp. 63-81; R. 2663-81). These seven alternatives ranged

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<sup>2/</sup> A five day test is required to ascertain the amount of BOD in a given sample of water. The test is a measure of the oxygen consuming capabilities of the organic matter present in the water (R. 3181-82). In many of the references cited herein, the pollutant is referred to as "BOD5".

from minor in-plant alterations to total impoundage of all process and cooling water. The desired reductions are to be accomplished in two steps. The technology recommended for 1977 (BPT) for cane sugar refineries pertinent to this action is the addition of biological (activated sludge) treatment plants for disposition of the comparatively low volume process waste streams. For achieving 1983 limitations, EPA designated as BAT construction and use of cooling towers for recycling the much higher volume (but minimally contaminated) barometric condenser cooling water, biological treatment of the cooling tower blowdown, and sand filtration of the total treatment plant effluent.

Numerous parties, including the sugar industry<sup>3/</sup>, submitted substantial additional comments on the proposed regulations (R. 2765-3035). The agency made no attempt after receipt of these comments and objections to seek clarification by discussing the matter with industry representatives, nor did it undertake to provide further justifi-

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<sup>3/</sup> In addition to comments presented by individual refinery companies, the United States Cane Sugar Refiners' Association ("USCSRA") presented on January 7, 1974 over 200 pages of analysis of deficiencies in EPA's technical and economic background material (R. 2783-3018). This submission will be referred to hereafter as "USCSRA Comments;" the technical critique will be identified by page and, where appropriate, appendix page number, and the separate economic analysis will be identified as the "Nathan Report."



cation for its conclusions in advance of issuing the final regulations.

On March 20, 1974, EPA issued the final effluent limitations for existing and new sources for the liquid and crystalline cane sugar refining subcategory (39 Fed. Reg. 10522; R. 3100-07). A final Development Document (R. 3108-3281), 4/, dated March 1974, was not released until June 1974, shortly before the period for seeking judicial review of the regulations expired. The final regulations increased the basis for the 1977 effluent limitations for BOD and TSS to 60 mg/l in process wastes from crystalline refineries, but otherwise rejected in summary fashion all comments which had questioned the transferability and effectiveness of the treatment technologies recommended by EPA, and the criticisms of the cost figures relied upon by EPA to justify designation of these control practices. The 1983 limitations were based on maximum concentrations of 40 mg/l for BOD and 15 mg/l for TSS for all waste streams.

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4/ Further references in this brief to the "Development Document" shall mean the final Development Document unless otherwise stated. The initial Development Document will be identified as the "draft," and the second will be identified as the "December 1973 Development Document."

D. Events Subsequent To The Filing of  
the Petitions For Review

Four companies initially filed petitions for review of the regulations applicable to cane sugar refineries in three separate Courts of Appeal.<sup>5/</sup> Pursuant to 28 U.S.C. Sec. 2112(a), the petitions were consolidated in this Court on October 15, 1974. Subsequently, The National Sugar Refining Company stipulated to a dismissal of its petition.

Establishment of a briefing schedule was at first deferred pending issuance by EPA of additional regulations bearing on those here at issue (see 39 Fed. Reg. 28926-27 (Aug. 12, 1974); id. at 37215, 37216 (Oct. 18, 1974)). On July 10, 1975, the Court granted a motion by EPA to add approximately 800 pages of new material to the record. Simultaneously, the Court stayed the briefing schedule pending a decision in another case in this Circuit which would determine whether the Court of Appeals had jurisdiction to hear these petitions. After the decision in Hooker Chemicals and Plastics Corp. v. EPA, 8 ERC 1961 (2d

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<sup>5/</sup> Amstar Corporation (No. 74-1830) and SuCrest Corporation (No. 74-1841) filed petitions in the Court of Appeals for the Second Circuit. California and Hawaiian Sugar Company (No. 74-2246) and National Sugar Refining Company (No. 74-2247) filed respectively in the Courts of Appeals for the Ninth and Third Circuits.



Cir. 1976), determined this Court did have such jurisdiction, the briefing schedule was subsequently extended to September 1, 1976.

On November 12, 1975, this Court issued an order granting the motion of petitioner C&H to a stay of the July 1, 1977 deadline for compliance with the regulations for a period equivalent to that between the filing of the motion on September 30, 1975, and oral arguments in this case.

Affidavits attached to C&H's motion established, among other things, that engineering estimates for the cost of the biological treatment plant required to meet the 1977 limitations amounted to \$7.5 million, a figure approximately five times higher than EPA's estimate for a plant of equivalent size (Affidavit of Philip F. Meads, August 29, 1975). Subsequently, C&H proceeded to procure bids and initiate construction of the plant. The ultimate cost, based on bids already accepted and engineering specifications for work yet to begin, will be \$6 million, with a total cost to C&H of \$5.5 million. (Affidavit of Philip F. Meads, attached hereto as Appendix B). At the same time the effect of these expenditures upon the quality of the receiving waters remains immeasurable.

As part of its continuing obligation under the Act to review the effluent limitations set for each industrial category, EPA has commissioned the firm of Colin A. Houston & Associates to conduct further studies on the achievability and economic impact of the 1983 limitations for cane sugar refineries. Although this report was to have been completed by June and then July 1, 1976, it now appears that it has been delayed for unspecified reasons and will not be released until after petitioners' briefs are filed in this action. (Id.)

We submit that these subsequent events are significant in terms of the review of the challenged regulations, and we request the Court to take judicial notice of them.

### III. ARGUMENT

#### A. This Court is Without Jurisdiction to Review the Regulations for Existing Cane Sugar Refineries

C&H contends that the regulations here challenged with regard to existing sources were actually issued as effluent limitations guidelines pursuant to Section 304, that EPA lacked authority to issue them as regulations under Section 301 of the Act, and that the effluent limitations should be reviewed in the appropriate district courts since section 509(b) does not mandate Court of Appeals review of



actions taken by the Administrator under Section 304. The Eighth Circuit Court of Appeals so held in CPC International Inc. v. Train, 515 F.2d 1032, 1037 (1975). These precise issues are now under consideration by the Supreme Court. E.I. DuPont de Nemours v. Train, 528 F.2d 1136 (4th Cir. 1975) ("DuPont I"), cert. granted, 96 S.Ct. 1662 (April 19, 1976); E.I. DuPont de Nemours v. Train, 8 ERC 1718 (4th Cir. 1976) ("DuPont II"), cert. granted, 44 U.S.L.W. 3738 (U.S., June 21, 1976).

A panel of this Court ruled on April 28, 1976, that EPA has authority to issue effluent limitation guidelines as regulations under Section 301 and that such regulations are reviewable exclusively by the Courts of Appeals. Hooker Chemicals & Plastics Corp. v. Train, supra. In the light of the fact that Hooker presently reflects the law of this Circuit, C&H will not brief the jurisdictional issue in extenso. However, C&H does challenge the jurisdiction of this Court to review the regulations purportedly issued under Section 301 and respectfully reserve its right on this issue should the Supreme Court determine that Congress intended that jurisdiction of these matters properly belongs in the district courts.

B. EPA Has Failed to Conform With the Requirement of Reasoned Decision-Making

Judicial review of informal rulemaking of the type represented by EPA's effluent limitation regulations is governed by the Administrative Procedure Act. The reviewing court is empowered to set aside agency action found to be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. Sec. 706(2)(A). In applying this standard, the reviewing court must make a "searching and careful" inquiry into the facts in the administrative record to determine "whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment." Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402, 416 (1971).

Several significant court opinions have considered the agency's treatment of the interplay of technical and legal issues under the Act and other similarly complex environmental statutes. The thrust of these decisions under the arbitrary and capricious standard of review has been to impose a requirement of "reasoned decision-making" upon EPA's substantive and procedural determinations. In order to facilitate effective public comment and judicial review, this test has emphasized that EPA must base its regulatory decisions on a complete evaluation of technical data,



identify clearly the bases of standards issued, and provide full responses to critical comments concerning its methodology. American Meat Institute v. EPA, 526 F.2d 442, 452-53 (7th Cir. 1975); Portland Cement Ass'n v. Ruckelshaus, 486 F.2d 375, 393-94, 402 (D.C. Cir. 1973), cert. denied, 417 U.S. 921 (1974); Environmental Defense Fund v. Ruckelshaus, 439 F.2d 584, 597-98 (D.C. Cir. 1971).

EPA failed to meet this standard in promulgating effluent limitation regulations for the cane sugar refining industry. EPA's action in issuing single number limitations under Section 301 and failing to consider adequately the factors specified in Section 304 was "not in accordance with law." Further, the agency's conclusions regarding available technology and achievable limitations were arbitrary and capricious.

C. EPA Violated Section 304 of The Act by Failing to Issue Ranges of Limitations and by Failing to Specify the Factors to be Considered in Issuing Individual Discharge Permits

EPA's regulations do not comport with the terms of Section 304(b) of the Act. The effluent limitations provide a specific numerical limit for pollutants per ton of melted sugar processed applicable to all crystalline cane sugar refineries. This contravenes both the language of the Act

and its legislative history, which clearly demonstrate that under Section 304(b) EPA was to provide a range of limitations and specify factors relevant to the actual application of technology to individual point sources. The permitting authority would then set precise effluent limitations after giving consideration to EPA's guidelines promulgated in accordance with Section 304(b).

Section 304(b)(1)(b) specifies the factors to be reflected in the EPA 1977 BPT guidelines for determining the control measures actually to be applied to point sources as follows:

...the total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application ... the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate....

Similar factors to be taken into account in designating BAT and the 1983 limitations to be applicable "to any point source ... within such categories and classes." (Sec. 304(b)(2)(B).

In referring to this provision the Senate Report states (p. 50):



In effect, for any industrial category, the Committee expects the Administrator to define a range of discharge levels, above a certain base level applicable to all plants within that category. In applying effluent limitations to any individual plant, the factors cited above should be applied to that specific plant.

Committee on Public Works, A Legislative History of the Water Pollution Control Act Amendments of 1972 (1973), at 1468 (hereafter cited as "Legislative History").

Two Congressional goals are apparent within this statement. First, with the possibility of fifty separate permit authorities being created, Congress took pains to specify certain technical factors to be considered in issuing each permit to assure some degree of uniformity and similar treatment of point sources with similar operating characteristics. Second, by directing EPA to establish a range of discharge levels, Congress recognized that some measure of flexibility had to exist if the program was to operate fairly and effectively.

By promulgating a precise numerical limitation instead of a range with accompanying guidelines for application, EPA has directly contravened these Congressional goals. Indeed, EPA's Development Document for crystalline sugar refineries recognizes that significant point source differences exist and tacitly admits the need for flexible

standards for this industrial subcategory. In discussing the model refineries used to develop the final limitations, the Development Document states (p. 107; R. 3220):

These refineries are considered to be generally representative of both large and small crystalline operations and of liquid operations. Obviously, any given existing installation may vary considerably from the models presented; each sugar refinery has unique characteristics and unique problems that must be taken into consideration. (Emphasis ours.)

(See also id. at 149, R. 3261.)

Yet, the "guidelines" promulgated as Section 301 regulations left no room for taking these unique problems into consideration. EPA instead provided only a general discussion of some of the Section 304 factors in the background material and stated in conclusory fashion that all of them had been considered in establishing the 1977 and 1983 effluent limitations for the industry. (Development Document 145, 151; R. 3257, 3262).

EPA has consistently defended its interpretation of the relationship between Sections 301 and 304 with the following arguments:

(1) The Act and its legislative history indicate purpose to achieve uniformity in terms of the limitations applied to similar point sources; thus, it was proper for EPA to issue single number limitations applicable



nation-wide to particular industrial categories.

(2) By classifying industries in separate subcategories, EPA in effect created "ranges" providing some measure of flexibility, as the specific limitations vary between subcategories in the same industry. Since EPA asserts it considered the Section 304 factors in determining the subcategories, it thus complied with the purpose of that provision.

(3) Adequate flexibility is supplied by inclusion in the regulations of a variance provision, which permits modifications upon a showing that factors relating to particular equipment or processes are "fundamentally different" from the factors considered in establishing the guidelines (39 Fed. Reg. at 10525).

These contentions are without merit.

(1) The goal of uniformity would still be attained if EPA had issued specific ranges of limitations for industrial subcategories and fully explicated the factors contained in Section 304 in separate guidelines to direct and limit the discretion of permit authorities. Those authorities would be authorized to adjust the limitations, within the specified range, for individual point sources if it were deemed necessary. This might occur, for example, should the age of a particular facility hinder full

application of the recommended control measures; or, when full application of the designated technology in a particular location might produce severe adverse environmental effects of a non-water quality nature. Essential uniformity of regulation would be preserved as well as a substantial role for state permit authorities (cf. Section 101(b)), instead of the rubber stamp position they now occupy.

(2) As EPA itself tacitly admits, there are sufficient significant differences from plant to plant within particular industrial subcategories to require that ranges of effluent limitations be authorized by the guidelines.

(3) The so-called variance provision does not provide the necessary flexibility, because its terms are entirely too restrictive, limiting application of the clause solely to technical and engineering considerations. It is difficult to conceive of any situations where the equipment or process employed by one plant within a subcategory will be "fundamentally different" from those utilized by other dischargers within the subcategory. This is certainly true of the crystalline cane sugar refinery industry, since nearly identical processes and equipment are used by all



companies to produce the same product.<sup>6/</sup>

At least two courts have rejected EPA's position that it need only consider the Section 304 factors in making its decisions about industry subcategorization. In American Iron and Steel Institute v. EPA, 526 F.2d 1027 (3d Cir. 1975), the court upheld EPA's authority to promulgate effluent limitations pursuant to Section 301, but it ruled that EPA had erred by issuing regulations containing single number limitations without stating fully how the factors in Section 304 should be considered in setting limitations in individual permits. The court disagreed with EPA's views that subcategorization represented "ranges" and that the variance provision injected sufficient flexibility into the overall regulatory scheme (id. at 1046).

The court concluded that EPA should have established ranges of limitations with a maximum ceiling on permissible discharges and detailed guidelines for application of the Section 304 factors by local permit authorities in setting limitations for individual point sources. Focusing on Section 304(b)(1)(B), the court stated (526 F.2d at 1042, 1043):

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<sup>6/</sup> The language of the EPA variance provision was indeed found too narrow by the court in Appalachian Power Co. v. Train, 9 ERC 1033, 1038-39 (4th Cir., July 16, 1976), which stated the provision should be revised to encompass economic considerations as well as the other factors listed in Section 304(b)(1)(B).

This second requirement clearly contemplates that the guidelines promulgated by the Administrator on the basis of broad categories or classes of industries are to provide guidance to those authorities ... which determine the precise degree of effluent control required of any individual point source.

\* \* \* \*

In other words, the permit grantors are to have a limited and carefully circumscribed discretion to take into account factors as specified by the Administrator.

Although disagreeing with the Third Circuit position on the question of ranges, the Fourth Circuit Court of Appeals in DuPont II, supra, also found fault with EPA's limited consideration of the factors stated in Section 304(b) (1) (B) and (b) (2) (B). The court remarked (8 ERC at 1723):

The reference in Section 301 to Section 304 must mean that Congress intended that the factors specified in Section 304 are pertinent to effluent limitations established under Section 301. Some of the specified factors are of practical applicability only to individual plants, for example "age of equipment and facilities involved". We construe the congressional intent to be that the specified factors shall be applied by the permit issuer in determining whether the presumptively valid effluent limitations should apply to a particular source of discharge. (Emphasis ours.)

In a subsequent decision, Appalachian Power Co. v. Train, supra, the Fourth Circuit reaffirmed this holding, and



stated (9 ERC at 1038): "Thus, the issuer of a permit under Section 402 may consider whether a particular applicant is to be held strictly to the confines of the agency's regulations."

This question is presently pending before the Supreme Court by virtue of its acceptance of a petition for certiorari in both the DuPont cases. C&H is also aware that this Circuit, in a brief statement in Hooker Chemicals & Plastics, supra, 8 ERC at 1967-68, took a contrary view on the issue of EPA's duty to state ranges of limitations and specify the manner in which the Section 304 factors should be applied in issuing individual permits. However, C&H respectfully suggests in the light of the above authority that these matters should be reconsidered in this action.

These points are especially pertinent to the regulations applicable to crystalline cane sugar refineries. The comments on the proposed regulations emphasized that there was no evidence that biological treatment could reduce BOD concentrations to the figure set for 1977, and that a range should have been established extending above 100 mg/l, the best performance level which available evidence indicated biological treatment possibly could achieve (39 Fed. Reg. at 10523; USCSRA comments at 21 and App. G, R. 2810, 2846-52).

If EPA had set such a range and fully explicated how the Section 304 factors were to be considered by permit authorities in establishing limitations within that range for individual point sources, then the permit authorities would have been able to take into account major differences and unique circumstances affecting individual refineries in determining proper control technology and pollutant levels when issuing discharge permits. In the case of C&H's refineries, these problems include: lack of presently available land for sludge disposal and cooling tower sites; no access to a municipal treatment system (Crockett); plant locations which will maximize the adverse environmental effects associated with EPA's control technology; and enormous costs for implementing this technology with nearly immeasurable beneficial effects on the present receiving waters (R. 2774-78, 3032-33).

D. EPA's Conclusion that Designated Transfer Technology is Capable of Achieving The Limitations Established for 1977 and 1983 is Arbitrary and Capricious

1. EPA Has Not Demonstrated That The Treatment Technology Designated as BPT Will Achieve The Effluent Limitations Established for 1977

The Act does not define either "best practicable control technology currently available" ("BPT") or "best



available technology economically achievable" ("BAT"). Rather, EPA is directed under Section 304(b) to identify the degree of effluent reduction attainable through application of BPT by 1977 and BAT by 1983 and to specify the factors to be considered in determining the control measures and practices which will constitute the respective treatment technologies for point sources.

For the crystalline cane sugar subcategory, EPA has limited its recommended treatment for 1977 to refinery process waters; the technology designated as BAT for 1983 focuses on the much higher volume cooling waters. EPA has based its 1977 effluent limitations for cane sugar refineries principally on biological (activated sludge) treatment of the process water waste stream.<sup>7/</sup> For a refinery with restricted land availability and no access to municipal treatment system, this process involves construction of a biological treatment plant, where the waste stream is exposed to active biota while undergoing

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<sup>7/</sup> Three additional minor control practices were included as BPT: collection and recovery of floor drainage; minimization of sucrose entrainment in barometric condenser cooling water by use of improved baffling systems and demisters; and dry handling of filter cakes with disposal to sanitary landfills, or complete containment of filter cake slurries. (Development Document 148; R. 3260). These practices are already in use in many refineries, and their addition does not involve substantial alterations.

aeration. This is followed generally by sedimentation resulting in a clear effluent. EPA has predicted that utilization of such treatment will reduce both biological oxygen demand and total suspended solids content in process wastes from a crystalline refinery to an effluent level of 60 mg/l. The limitations established for 1977 are based on these levels (39 Fed. Reg. 10523, 10525).8/

No cane sugar refinery currently employs an activated sludge process. EPA admits its recommendation of such treatment does not adhere to the agency's normal definition of practicable and available technology, which is based on the average of the best existing treatment performance within the industry and examination of the proven economic and engineering reliability of such "currently available" technology.9/ The absence of present

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8/ The limitations are expressed in the regulations in both metric and English units as amounts per unit of sugar processed each day; i.e., the 30 day average limit is .43 kg. of BOD and .09 kg. of TSS per 1000 kg. of melt, or .86 lbs. of BOD and .18 lbs. of TSS per ton of melt. These figures are derived from the maximum concentrations for process wastes mentioned previously (60 mg/l) with the inclusion of the permissible pollutants in the cooling waters (approximately 10 mg/l of BOD and 0 mg/l of TSS). (Development Document 147; R. 3259.)

9/ The Senate Report on the Act stated that EPA should establish the range of 1977 levels "based upon the average of the best existing performance by plants of various sizes, ages, and unit processes within each industrial category." Legislative History at 1468 (emphasis ours). EPA has stated



use of biological treatment was cited by EPA as the principal reason for using an "average" rather than "exemplary" plant approach as the basis for predicting the effluent reduction attainable and for doubling the maximum concentration of BOD in the treated effluent from 30 mg/l in the proposed regulations to 60 mg/l in the final regulations (39 Fed. Reg. 10523, 10524; Development Document 146-47, R. 3258-59.)

In response to critical comments that such technology could not be considered "demonstrated," the agency agreed no refinery presently uses the process, but stated in the final regulations (39 Fed. Reg. at 10522):

However, the technology itself is widely available and practiced in other industries with similar raw waste characteristics - for example, the grain milling and the citrus and potato industries. There are no characteristics of the refinery waste waters that would render them untreatable by the biological treatment system described.

Similar assertions are made in the Development Document (at 97,146; R. 3212, 3258).

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Continued

there must exist a "high degree of confidence" in the practicability of such technology as a result of pilot plants, demonstration projects, and general use. (Development Document 145, R. 3257). The record is devoid of any evidence of use of pilot plants or demonstration projects in the cane sugar refining industry, and, as noted, the activated sludge process is not in use at all in the industry at present.



EPA thus based BPT for cane sugar refineries on "transferable" technology. However, examination of the Development Document and other record data reveals that EPA failed to document the effectiveness of biological treatment in other cited industries or to justify its predicted effectiveness when applied to cane sugar refineries. These deficiencies are underscored by EPA's own knowledge of and the comments received on the special sludge separation problems which would be encountered in application of the technology to sugar refinery wastes (see Development Document 87, 152, R. 3201, 3263; USCSRA Comments, App. G at G-1, G-4 to G-6, R. 2946, 2949-51).

Moreover, the Development Document itself makes no conclusive findings regarding the predicted effectiveness of the transfer technology. Indeed, the converse is true, as demonstrated by the following excerpts (Development Document 87, 147; R. 3201, 3259, emphasis ours):

It is felt that properly designed and operated systems are capable of treating cane sugar refining waste waters to achieve high reductions of BOD.

. . . . .

It is felt that the effluent limitations guidelines presented in this section are reasonable and technically easily achievable through the application of improved in-plant controls and the addition of an appropriate treatment system to treat the process water stream....

. . . . .

It is assumed that the model biological treatment system will attain reductions in the process water BOD5 loading to 60 and 100 mg/l for the crystalline and liquid cane sugar refining subcategories, respectively.

The basis for EPA's "feelings" that biological treatment is practicable consists of references in the record to other industries which employ forms of biological treatment or have wastes similar to those of sugar refineries. However, in each instance, EPA's study falls far short of representing hard evidence that biological treatment can reach the 60 mg/l level and thereby achieve a 95% or better reduction in BOD loadings when applied to cane sugar refineries.<sup>10/</sup> EPA in addition made no effort to explain how sugar refineries could avoid the sludge separation and plant upset problems which negatively affected treatment results even in several of the cited industries.

The Development Document examined the treatment experience in the raw sugar industry where, in some cases, companies utilized impoundage lagoons (a form of biological treatment which requires considerable available land) to

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<sup>10/</sup> Process wastes at the C&H Crockett refinery presently average between 1200-1500 mg/l of BOD.



treat waste streams from combined raw sugar factories and refineries. However, because of the commingling of these wastes, it was concluded that it was "impossible to determine the treatment efficiency associated with the application of this technology to refinery wastes alone" (Development Document 101; R. 3216). Moreover, this treatment did not involve an activated sludge process.<sup>11/</sup>

EPA next refers to the "successful" use of anaerobic and aerobic fermentation processes in the beet sugar industry (Development Document 97; R. 3212). However, no consideration was given to the fact that most beet sugar wastes (Steffen process wastes, agricultural weeds, mud, transport and washing trash) are not common to cane sugar refineries. More importantly, EPA does not recommend biological treatment in the beet sugar industry even for the two wastes which are common, barometric condenser water and calcium carbonate wastes. (Development Document for Proposed Effluent Limitation Guidelines for the Beet Sugar

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/ EPA also purported to rely on pilot studies made on raw sugar factory wastes in Natal, South Africa. However, the paper cited in the record on this point (R. 3538-46) indicates these experiments were made under conditions of controlled loading that would not apply in large scale refinery practice. The size and nature of the two existing systems in Natal were not disclosed in the paper, and subsequent correspondence with the author stated that data on a full-scale activated sludge treatment plant was not yet available (R. 3547).



Processing Subcategory [August 1973], at 120; R.3402). The study cited in the cane sugar Development Document on treatment of beet sugar wastes itself states: "The removal efficiencies of present waste treatment processes are difficult to assess."<sup>12/</sup> The final Development Document for the beet sugar subcategory is even more candid:

For reasons developed within the document such as the varying and seasonal nature of the waste and adaptability of conventional treatment measures to beet sugar processing, conventional biological treatment has generally proved to be unsuccessful to date.<sup>13/</sup>

Another reference made by EPA was to the grain processing industry. The grain processing Development Document excerpts (excerpts appearing at R. 3445-3505) discussed biological treatment at three operating wet corn mills, three pre-treatment plants, and two pilot plants, but produced no evidence of the process consistently yielding

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<sup>12/</sup> "State-of-Art, Sugarbeet Processing Waste Treatment," EPA, Water Pollution Control Research Series 12060 DSI (July 1971) (Development Document 161; R.3270). (The Development Document erroneously cites reference 17; this study is actually listed as reference 10.) An identical statement appears in the Development Document for Proposed Effluent Limitation Guidelines for the Beet Sugar Processing Subcategory (August 1973), at 69 (R.3351).

<sup>13/</sup> Development Document for Effluent Limitation Guidelines and New Source Performance Standards for the Beet Sugar Processing Subcategory of the Sugar Processing Point Source Category (January 1974), at 131.

results of the quality demanded of sugar refineries.

The Development Document for the Grain Processing Segment of the Grain Mills Point Source Category (December, 1973) contains the following information on the three wet corn milling plants presently using a biological process. For "Plant A," the effluent characteristics were as follows: BOD loads in the effluent ranged from 6-95 mg/l and averaged 35 mg/l, while TSS loads ranged from 8-372 mg/l and averaged 169 mg/l. The Document further noted that during the time of the sampling program the facility was in an upset condition, evidenced by heavily bulking sludge, and stated (id. at 68; R. 3486):

During this period of time, effluent BOD5 ... averaged 444 mg/l with a suspended solids content of 213 mg/l. Such upsets are common to all treatment plants in the corn wet milling industry ....

In terms of BOD5 removal, Plant A represents the best treatment in the industry. Suspended solids removal, however, is below expectations.

Regarding "Plant B," effluent concentrations during a four-day sampling period were acceptable until sludge bulking occurred at the end of the period resulting in a TSS content of just over 100 mg/l on the last day, evoking the statement that this was "a graphic illustration of the effect that upsets in the industry can have on treatment efficiency." Only limited data were available on



"Plant C," but BOD levels were reported between 200 and 400 mg/l and TSS levels at 150 to 300 mg/l as a result of the "common problem" of solids separation and the inability to control sludge bulking. (Id. at 69-70; R. 3487-88). The Document further remarked (id. at 96)14/: "Finally, it must be recognized that the treatment of high strength carbohydrate wastes is difficult." It is difficult to perceive how EPA can rely on these data to validate the transferability of biological treatment to cane sugar refinery wastes.

EPA similarly mentions results obtained from biological treatment in the fruit and vegetable industry, commenting that "activated sludge treatment plants are capable of removing 95 percent or better of BOD5 based upon proper nutrient addition, design, and operation." (Development Document 87; R. 3201). While noting that plant upsets affect this capability, the Document provides no certain explanations as to what proper design, nutrient addition, and operation should be in the cane sugar industry. The Development Document for Proposed Effluent Limitations Guidelines and New Source Performance Standards

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14/ EPA's "excerpts" from the Grain Processing Development Document neglected to include the statements made on page 96, skipping from page 95 to page 98 (R. 3501, 3502).



for the Citrus, Apple, and Potato Segment of the Canned and Preserved Fruits and Vegetables Processing Point Source Category (November, 1973) is simply listed as a reference in our Development Document (R. 3272).15/

The final Development Document for those Industries (Development Document for Proposed Effluent Limitations and New Source Performance Standards for the Apple, Citrus and Potato Segment of the Canned and Preserved Fruits and Vegetables Processing Point Source Category, March 1974), however, revealed that exemplary biological treatment yielded effluents varying widely in strength among the three subcategories, and that no effort had been made to transfer treatment efficiency results as between the subcategories. Further, while it was stated that BOD removal in the three industries could be as high as 95-97 percent, the BPT requirements were set at a BOD removal level of 84-94 percent (id. at 59, 63, 69, 160). It also appears that these levels include the impact of screening in

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/ This interim Development Document only gives generalized summary data on activated sludge results in these industries (at pp. 100-02). However, one source apparently relied on in discussing potato wastes is R.T. French, Co., "Aerobic Secondary Treatment of Potato Processing Waste" (1970), which recommends that "[a]dditional studies in the area of sludge bulking control are needed." (p.3). C&H is aware of any subsequent developments which have solved the bulking problem in this industry.

advance of biological treatment (id. at 162). When EPA sets lower treatment levels for industries already employing biological treatment, it casts doubt on the 95 percent and higher removal figure required by EPA's transfer of that technology to crystalline cane sugar refineries.<sup>16/</sup>

Finally, EPA stresses that twelve refineries discharge process directly into municipal treatment systems, most of which use activated sludge plants, and cites this fact as support for the view such technology is practicable (Development Document 97; R. 3212). However, EPA failed to explain an earlier statement that "[c]onventional design criteria are not directly transferable from municipal treatment applications" (id. at 87; R. 3201). In such systems, refinery wastes constitute a small percentage of

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<sup>16/</sup> In supplementing the record after these petitions were filed, EPA added excerpts from the interim Development Document for the Dairy Product Processing Point Source Category (January, 1974) (R.3506-37). It is unclear why this industry was chosen for comparison, since its wastes contain relatively high fat and protein constituents not found in sugar refinery wastes. The final Development Document for this industry gives only meager data on the consistent effectiveness of biological treatment. It does note, however, that BOD removal may drop to the 30 percent level when sudden, highly concentrated waste loads are introduced or when plant upsets occur. In addition, it states that one of the most serious problems in activated sludge treatment of these wastes is the "poor characteristics of the sludge formed" and that procedures to control this "highly complex" problem "have not yet been developed." Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Dairy Product Processing Point Source Category (May, 1974) at 97, 107.



the total volume of wastes being treated. Thus, these systems have not had to deal with the special sludge separation problems associated with the treatment of sugar wastes alone, and cannot be viewed as proving the effectiveness of such treatment.

2. EPA's Predications of the Effectiveness of the Technology Designated as BAT Are Not Supported by the Record.

BAT for cane sugar refineries to meet the 1983 effluent limitations proposes the use of cooling towers to permit recycling of once-through barometric condenser cooling waters in order to concentrate the low level of BOD (10 mg/l or less) entrained in those waters. A portion of the resulting concentrated water would then be pumped to the existing activated sludge plant for treatment. (Development Document 152; R. 3263). Use of this technology, is wholly unjustified in view of the low level of BOD found in the cooling water and the high cost and adverse environmental effects associated with use of such towers (see Sections E1(c) and 2(c), infra).

Additional technology included as BAT is the construction of a sand filtration system to treat further the effluent from the biological treatment plant. This again is technology transferred from other industries, and C&H contends its effectiveness has not been demonstrated in



the record before this Court.

The effectiveness of sand filtration depends in large measure on how long the filters can continue to operate at reasonable flow rates and with acceptable pressure drops to give a satisfactory effluent. Their use is appropriate for waters containing low quantities of suspended matter permitting long, economic runs. With too high a concentration of suspended matter, the filters tend to become blocked quickly and require backwashing at intervals too frequent for economic operation. EPA has not demonstrated that sand filters can be operated economically or that they can achieve the predicted reduction levels on effluent from a cane sugar refinery biological treatment plant. In view of the recognized tendency of carbohydrate wastes to produce bulking sludge in the activated sludge treatment process (Development Document 87, R. 3201; USCSRA Comments, App. G at G-1, G-4 to G-6, R. 2946, 2949-51), it is reasonable to expect a high carryover of suspended matter (sludge) in the treatment plant effluent causing frequent problems with operation of the sand filtration system. The "transfer" of this technology is not justified without a demonstration or full explanation that such filtration difficulties are within the limits of technical and economic acceptability.

EPA, in replying to a comment questioning the use of sand filtration following biological treatment of sugar wastes stated (39 Fed. Reg. 10522, Comment 4):

This is proven technology, currently being practiced within the grain milling, the oil refining, and the soaps and detergents industries .... it has been so thoroughly demonstrated that there is little doubt that it can be utilized by 1983 within this industry segment.

The Development Document does not discuss the "proven" use of sand filtration in these other industries. But it does note the problems discussed above which may make the process technically and economically infeasible. (Development Document 91-92; 152; R. 3206-07, 3263.)

The Document notes that rapid sand filters<sup>17/</sup> have relatively high operating costs because they require frequent backwashing and cannot be fully operational for extended periods of time, and also states (id. at 91; R. 3206):

Rapid sand filters are subject to a variety of ailments such as cracking of

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<sup>17/</sup> Slow sand filters are normally used for small package plants and rarely require cleaning. Since the background data in this record is premised on a flow rate of 1.19 million gallons per day and daily backwashing (R. 2222, 2235), it is clear that EPA is recommending use of rapid sand filters as BAT. At C&H's Crockett refinery, the effluent from a biological treatment plant will be approximately 1.5 million gallons per day prior to addition of the blowdown from any cooling tower.



the bed, formation of mudballs, plugging of portions of the bed, jet actions at the grave-sand separation plane, sand bails, and sand leakage into the under-drainage systems.

These problems are likely to be particularly serious in view of the sludge bulking and separation problems previously discussed which will affect the effluent passing into the sand filter. EPA even admitted some hesitance on this point by stating there existed "uncertainty at present of the ratio of soluble to insoluble BOD in the effluent from the biological treatment system." (Id. at 152; R. 3263).

No guidance was provided as to specific means of avoiding these difficulties other than the innocuous comment that "[u]sually these problems can be minimized or eliminated by proper design and plant operation." (Id. at 91; R. 3206). The separate section of the record entitled "Sand Filtration" consists predominantly of handwritten notes of estimated costs of completing and operating the system (R. 2214-36).

Finally, although EPA stated in the final regulations that use of filtration in the grain milling industry supported its recommendation of transfer, this assertion is difficult to comprehend in the light of the decision in CPC International, Inc. v. Train, supra. That decision reviewed



the effluent regulations applicable to the corn wet milling industry under Section 306 for new sources. In the course of this review, the court stated (515 F.2d at 1047): "The EPA's supporting documents concede that the deep bed filtration technology has not been 'demonstrated' within the corn wet milling industry."<sup>18/</sup> Just as in this case, EPA there asserted that deep bed, or sand, filtration was proper transfer technology for a different industry without an independent demonstration of transferability in the record.

The cane sugar refining industry is thus confronted with technology designated for use by 1983 which, on the basis of this record, is technically less efficient and economically far more expensive than EPA has predicted. In addition, it must be remembered that the 1983 limitations are premised on the 1977 limitations already being achieved.

3. EPA's Conclusions on the Effectiveness of the Recommended Transfer Technology are Arbitrary and Capricious

Given the inadequacies in the administrative proceeding detailed above, EPA's conclusions on the achievability of the effluent limitations for cane sugar

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<sup>18/</sup> The court subsequently held that EPA's prediction as to the efficacy of deep bed filtration was not a reasonable one on the basis of the record evidence. 515 F.2d at 1049. See discussion of this case, infra. The deep bed filtration referred to is the technical equivalent of the sand filtration recommended for cane sugar refineries.

refineries set for 1977 and 1983 fail to meet the test of reasoned decision-making required under the APA. Indeed, the agency's predictions regarding the effectiveness of biological treatment and sand filtration partake more of the nature of a "crystal ball" inquiry than of reasoned decision-making. Cf. Portland Cement Ass'n v. Ruckelshaus, supra, 486 F.2d at 391. Several decisions by this and other Courts of Appeal have remanded EPA regulations based on transfer technology for deficiencies similar to those appearing in this record.

The court in CPC International, Inc. v. Train, 515 F.2d 1032 (8th Cir. 1975) faced an almost identical situation in reviewing EPA's prediction that use of a deep bed filtration process would achieve the new source standards set under the Act for the corn wet milling industry. The court posited that for EPA to base its standards on transfer technology it must (515 F.2d at 1048):

- (1) determine that the transfer technology ... is available outside the industry; (2) determine that the technology is transferable to the industry; and (3) make a reasonable prediction that the technology, if used in the industry, will be capable of removing the increment [of pollutants] required by the new source standards.

Applying this test, the court held that EPA's prediction was not the product of reasoned decision-making.



The court found no evidence in the record of the degree of effluent pollutant reduction achieved by other industries employing deep bed filtration. EPA had increased the limitation by nearly 50% between the proposed and final regulations, commenting only that technology was not yet available to achieve routinely the lower level. Inadequate consideration had been given to the problem of upsets and shockloads which could substantially decrease the efficiency of the filtration treatment. Finally, the court noted that EPA statements that the filtration process "should" reduce waste loads and that the agency "felt" the standards could be achieved fell short of the "concrete data, test results, literature, or expert opinion" needed to support EPA's prophecies." (Id. at 1049-50.)

Precisely the same error permeates the present record. The agency referred to operation of biological treatment in several industries without providing detailed documentation of the actual reductions consistently achieved or a reasoned explanation of how such results support the limitations established for sugar refineries. No rationale was given for selection of the maximum 30 mg/l BOD concentration for treated process wastes in the proposed regulations, and this figure was doubled in the final regulations with the single comment that such modification was

necessary because no refinery currently operates a biological plant to treat process wastes (39 Fed. Reg. at 10523). In fact, no defensible justification exists for either figure.<sup>19/</sup>

Inadequate consideration was given to the problems caused by upsets in the refinery process and sludge separation difficulties associated with sugar wastes which will adversely affect operation of both the biological treatment and sand filtration systems. EPA's summary conclusion that it "continues to believe" (*id.*, Comment 8) biological treatment of process wastes will achieve the proposed 1977 BOD level echoes the unsupported statements found inadequate in CPC International, Inc. v. Train.

Several other Courts of Appeal have had occasion to review effluent limitations predicated on use of "transfer" technology and have ordered remands on finding deficiencies in EPA's decision-making similar to those which

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<sup>19/</sup> Confronted by a similar change in a final Clean Air Act emission standard which lacked adequate explanation, the court in Kennecott Copper Corp. v. EPA, 462 F.2d 846 (D.C. Cir. 1972), remanded the record and instructed the Administrator "to supply an implementing statement that will enlighten the court" on the reasons for the change in view of contradictory evidence in the record: "Inherent in the responsibility entrusted to this court is a requirement that we be given sufficient indication of the basis on which the Administrator reached the [standard issued] so that we may consider whether it embodies an abuse of discretion or error of law." (*id.* at 849, 850).



characterize the record here. This Court did so upon review of the effluent limitations issued for the phosphate manufacturing industry. Hooker Chemicals & Plastics Corp. v. Train, 8 ERC 1961 (2d Cir. 1976). After indicating that EPA could base limitations on transfer technology, the Court cautioned (id. at 1972):

But even if technology which is not presently in use can be treated as available and achievable, there must be some indication in the administrative record of the reasons for concluding that such technology is feasible and may reasonably be expected to yield the effluent reduction mandated when applied to the particular industry.

Applying this test, the Court held that EPA had failed to demonstrate that either of two alternative technologies (vacuum casting and total recycle of process water) designated as BAT were in fact transferable to the phosphorus pentasulfide industry. The Court stressed that EPA had provided no more than a reference to a single general scientific treatise in support of vacuum casting, and that the agency had not answered statements in the record (including those of EPA's own consultant) that salt precipitation would prevent successful use of a total recycle system (8 ERC at 1973).<sup>20/</sup> See also American Meat

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<sup>20/</sup> The Court also remanded another specific 1983 limitation and EPA itself conceded that revision was necessary

Institute v. EPA, 526 F.2d 442, 463 (7th Cir. 1975);

American Iron & Steel Institute v. EPA, 526 F.2d 1027, 1062, (3d Cir. 1975).

The Court of Appeals for the Fourth Circuit has twice reviewed EPA regulations premised on transfer of technology. Tanners' Council v. Train, 8 ERC 1881 (4th Cir. 1976); FMC Corporation v. Train, 8 ERC 1731 (4th Cir. 1976). In Tanners' Council, EPA had relied on performance data from the meat-packing industry in establishing limitations for the leather tanning and finishing point source category. When comments stressed that biological treatment was less effective in treating the more fibrous and insoluble components of tannery wastes, EPA responded as it did here by simply raising the maximum permitted concentration in the final regulations. The court found the response inadequate

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in four additional sets of limitations in various other subcategories. The Court advised that in such revision the agency must respond directly to petitioner's challenges regarding the availability or effectiveness of certain treatment processes and the creation of non-water quality environmental problems (8 ERC at 1974).

In the companion case reviewing new source standards issued under section 306, this Court remanded the regulations after determining they were predicated on the same data base used for existing sources which had failed to show that the designated technology was available. Hooker Chemicals & Plastics Corp. v. Train, 8 ERC 1975, 1977 (2d Cir. 1976).



and stated the record implied EPA's conclusions "are the product of guesswork and not of reasoned decision-making."

(Id. at 1884):

When EPA became convinced of the dissimilarities in the wastes of the tannery and meat packing industries, it arbitrarily increased the pollution levels transferred from the meat packing industry, rather than use waste reduction levels actually demonstrated in the tannery industry or a comparable industry.

EPA had provided no firm evidence to substantiate the final limitations purportedly based on the transfer technology. The court also found the record gave no assurance that the later addition of tertiary treatment would achieve the 1983 limitations and advised that further review would be warranted once EPA made public new research on the effectiveness of such treatment with tannery wastes (Id. at 886-87).

In FMC Corp. v. Train, supra, EPA purportedly based its new source standard for the plastics and synthetics industry on results achieved through application of mixed media filtration in municipal plants and in the petroleum industry. The court found, however, that the record was "devoid" of consideration by EPA on the transferability of the recommended treatment, and it refused to accede to EPA's request that its expertise be accepted in

making such a judgment (8 ERC at 1740): "This Court... cannot decide such questions on blind faith." The new source standard was remanded.

EPA's actions in this proceeding are strikingly similar and just as deficient as those found objectionable in the Hooker and Tanners' Council decisions, and the record is as barren of support as that found in FMC Corp. v. Train. After strong objections were registered on the predicted effectiveness of biological treatment in the proposed regulations (USCSRA Comments, App. G.; R. 2946-52), EPA arbitrarily doubled the permitted BOD concentration with the meager explanation that this was necessary because no refinery currently employed the recommended technology. No scientific evidence was adduced to support selection of the 60 mg/l figure, and EPA refused to respond to significant comments questioning the operational effectiveness of the BPT and BAT technology when applied solely to sugar wastes.

In International Harvester Co. v. Ruckelshaus, 478 F.2d 615 (D.C. Cir. 1973), the court reversed an EPA decision refusing to extend the deadline for certain emission standards. The court stated EPA must "bear a burden of adducing a reasoned presentation supporting the reliability of its methodology" (id. at 643), and stressed that this burden was not met by leaving unexplained numerous



technical assumptions and dismissing critical industry evidence and comments. Concurring, Judge Bazelon instructed that the role of judicial review is to assure a framework for principled decision-making (id. at 651): "Such a framework necessarily includes the right of interested parties to confront the agency's decision and the requirement that the agency set forth with clarity the grounds for its rejection of opposing views." (Id. at 651.) See also DuPont II, supra, 8 ERC at 1728-30; Portland Cement Ass'n v. Ruckelshaus, supra, 486 F.2d at 392.

E. EPA Failed to Give Adequate Consideration to the Adverse Environmental Effects and the Costs Associated with Implementation of the Designated Treatment Technologies

Sections 304(b)(1)(B) and 2(B) specifically direct EPA to consider certain factors in formulating BPT and BAT. These factors include potentially adverse non-water quality environmental effects which may be caused by particular treatment technologies, and the economic cost of such technologies. EPA gave inadequate consideration to both these factors in the record underlying the crystalline cane sugar refinery regulations. The high cost and adverse environmental factors associated with the recommended technologies for sugar refineries, particularly BAT for 1983, raise the question of whether such technology should even be attempted.

1. Non-Water Quality Environmental Effects

In both the Development Document and the final regulations, EPA did little more than acknowledge that certain non-water quality environmental problems pointed out by the industry in its comments (USCSRA Comments at 8, 33-34; R. 2796, 2822-23) would ensue from application of the technologies designated as BPT and EAT (Development Document 141-43, 149, 155, R. 3254-56, 3261, 3266). EPA made no realistic effort to suggest effective means of avoiding these problems or to demonstrate that the benefits of reduced discharges into the nation's waters offset them. It is contrary to both public policy and the agency's mandate to promulgate water pollution regulations which potentially may cause as many deleterious effects as they seek to alleviate. Portland Cement Ass'n v. Ruckelshaus, supra, 486 F.2d at 385n. 42.

(a) BPT: Waste Disposal and Land Use

Implementation of biological treatment for 1977 poses both land use and solid waste disposal problems. For those refineries lacking access to municipal treatment systems for waste discharges, a biological treatment plant will have to be constructed to accommodate process waste water. The refinery additionally must undertake disposal of both their resulting bacterial sludge and the dry filter aid



waste material. Those refineries located in urbanized areas (representing over two thirds of the nation's total refining capacity) will face severe difficulties obtaining land both for construction of biological treatment plants and for locations of suitable land fill sites for disposal of filter aid and bacterial sludge. (USCSRA Comments at 6, App. D at D-4, App. F at 18; R. 2794, 2872, 2918; see also R. 2779). Even those refineries which now have access to land fill sites for disposal of filter aid may encounter objections from public health authorities if they request disposal of bacterial sludge.

These problems are virtually ignored in the Development Document (109-10, 129, 149; R. 3222-23, 3242, 3261) and in the preamble to the final regulations (39 Fed. Reg. 10522-10524). Industry comments emphasized that "settled activated bacterial sludge is very dilute, and its disposal is not simply a matter of landfill." (39 Fed. Reg. at 10523.) EPA's terse reply was that there were many ways in which the sludge could be handled, including drying, thickening and further filtration (id.). However, no mention was made of the significant economic costs involved in thickening and partially de-watering the sludge, and, if necessary, acquiring land for disposal sites.

(b) Energy Costs

EPA was equally cavalier in its treatment of increased energy usage associated with the recommended treatment technology. In the final regulations, EPA stated that the extra energy required to operate a biological treatment plant and the pumps necessary to transport barometric condenser water to cooling towers would not be burdensome even in the light of current energy shortages. It was stated that the estimated additional energy to achieve BPT would range from 0.6 and 0.84 percent of present energy usage; to achieve BAT, the estimate was between 1.6 and 6.1 percent of current usage. The agency judged these estimates not "excessive" (39 Fed.Reg. at 10523), but no explanation was given as to whether the term "excessive" was meant in context of increased environmental benefits or merely in contrast to other demands for energy.

It is, however, impossible to ascertain how EPA made these "estimates." Those noted above are at complete variance with those presented in the Development Document under the heading "Related Energy Requirements of Alternative Treatment and Control Technologies" (at 140-41; R. 3253-54).

EPA there provided estimated costs associated with each treatment level for the three model refineries used for



data estimates throughout the Development Document. Using the EPA assumption of the cost of 2.3 cents per kilowatt and the EPA figures on total cost of each incremental treatment level, the additional energy cost increase for biological treatment for a small crystalline refinery must be computed as a range from 5 to 18 percent of current expenditures; for a large crystalline refinery, the range was from 4.2 to 15.6 percent (USCSRA Comments at 33; R. 2822). No background data were provided even for these estimates in the Development Document.

Despite this inadequacy, EPA at least should have used the same bases of prediction for these estimates and the complementary estimates stated in the final regulations. Portland Cement Ass'n v. Ruckelhaus, supra, 486 F.2d at 392, 393. Further, it was incumbent upon EPA to consider the additional adverse environmental consequences in terms of resource depletion and air and water pollution which would occur (R. 2796, 3033) simply as a result of the necessity to produce this new energy for use in BPT and BAT in cane sugar refineries. Appalachian Power Co. v. EPA, supra, 9 ERC at 1045-46.

(c) BAT: Cooling Towers

Even greater adverse environmental problems will attend implementation of BAT for 1983. This technology

requires the construction and operation of cooling towers to recycle the barometric condenser cooling water for concentration and eventual removal of the maximum 10 mg/l of BOD entrained therein.<sup>21/</sup> In addition to the high energy costs involved in pumping the large volume of cooling water, these cooling towers have severe fogging and noise effects. No method has been discovered to date to eliminate these effects completely in those industries currently utilizing them. As EPA admits, particularly in urban locations, continuous fogging can create not only annoyance but also substantial traffic safety problems (Development Document 142; R. 3255). In the case of C&H, for example, the refinery at Crockett is located adjacent to both a residential area and an elevated bridge carrying Interstate 80 over the Carquinez Strait. The area is already subject to low-lying river fogs in the winter, and a cooling tower would greatly aggravate this problem. (R. 2775-2777.)

These adverse effects were pointed out to the agency following issuance of the proposed regulations

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<sup>21/</sup> In the present state of the art, there is no absolute method of determining the quantity of BOD which might be entrained in the cooling waters. The five day biological oxygen demand measure is not a precise test when applied to low level concentrations. (R. 613-671). It is possible to get readings of levels of 6-8 mg/l when in fact no BOD is present in the sample being tested.



(USCSRA Comments at 8, 33-34, App. F at 19; R. 2796, 2827-28, 2919; see also R. 2779, 3032). Once again EPA glossed over these points in the Development Document and the introduction to the final regulations. The Development Document stated that proper "design" and "placement" of towers could reduce, but not eliminate, these problems. It was also noted that these vague mitigation alternatives "may or may not result in significant cost increases" (at 142-43; R. 3255-56). The final regulations peremptorily dismissed these issues with the single comment that "[f]or some locations, some of the time, these problems [fogging and noise] may be encountered. However, through proper design these effects can be minimized." (39 Fed. Reg. at 10523.)

A similar failure to give appropriate consideration to adverse environmental effects was grounds for a remand in Essex Chemical Corporation v. Ruckelshaus, 486 F.2d 427 (D.C. Cir. 1973), cert. denied, 416 U.S. 969 (1974). While the court held that a particular standard established under The Clean Air Act for recycle acid plants was reasonable, it found fault with EPA's failure to consider adverse environmental effects resulting from the use of scrubber systems needed to meet the standard. The record evidence revealed that the scrubber system would create significant land and water pollution problems as a result of

the need to dispose of 52 pounds of byproduct per ton of acid produced. Although aware of this consequence, EPA had given no consideration to alternative control strategies nor suggested how waste disposal might be accomplished with the least negative results. As the court stated (486 F.2d at 439):

...the feeble statements in the Background Document that '[m]ethods for disposing of these products will have to be considered by plant operators,' and 'process designers are investigating several means of handling these wastes,' are poor substitutes for the reasoned consideration of this problem that is required.<sup>22/</sup>

The statements in the sugar refinery Development Document are equally as feeble as those found objectionable by the court in Essex.

This problem was also considered by the Third Circuit in a decision rendered under the Act, American Iron and Steel Institute v. EPA, supra. There the court determined EPA had given appropriate consideration to non-water quality environmental impact. But the record in that case must be contrasted with that before the Court here. In

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<sup>22/</sup> The court also directed EPA to study on remand the waste disposal problem associated with use of another scrubbing system for coal-fired steam generator plants. Again, EPA's only remark on this problem in the Background Document was that "[l]ime-scrubbing systems are essentially throw away processes that produce significant quantities of solid waste (id. at 441)."



the iron and steel Development Document EPA had presented over 60 pages of study of these problems and suggested detailed engineering techniques to minimize their effect. Further, the court noted the petitioners had not submitted contrary evidence on these points. (526 F.2d at 1049.)

## 2. Inadequacy of Cost Assessments

Section 304 directs the Administrator to consider cost in issuing regulations containing the 1977 and 1983 limitations and the treatment technologies upon which they are based. With respect to the designation of BPT, the factors to be considered include "consideration of the total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application ...." (Section 304(b)(1)(B).) As regards recommendation of BAT, the factors relating to such assessment include "the cost of achieving such effluent reduction ...." (Section 304(b)(2)(B).)<sup>23/</sup> Although EPA may contend the Act does not mandate a precise cost benefit analysis on

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<sup>23/</sup> The Act includes in Section 301(c) a variance provision applicable to 1983 limitations which encompasses economic factors. A permit modification may be authorized if it: "(1) will represent the maximum use of technology within the economic capability of the owner or operator; and (2) will result in reasonable further progress toward the elimination of the discharge of pollutants." EPA has not as yet issued any interpretive regulations concerning this provision. Read literally, it would seem to require a discharger to be on the verge of bankruptcy before a variance could be obtained which eased the limitations and the concomitant requirement of particular treatment technology.

the impact of regulations on specific categories of industries or on individual point sources, the language at least requires that EPA give a reasoned justification for its position that the costs associated with the recommended technologies are both accurate and bear some relationship to the degree of environmental benefits achieved. As discussed below, EPA failed to discharge this duty properly with respect to the treatment technologies designated for both 1977 and 1983 for crystalline cane sugar refineries.

EPA has taken the position, by inclusion of boilerplate language in each set of industry regulations, that "[i]t is not feasible to quantify in economic terms ... the costs resulting from the discharge of these pollutants to our Nation's Waterways." (39 Fed. Reg. at 10524.)

However, the statement continues by predicting that implementation of BPT and BAT will "substantially reduce the environmental harm" from continued sugar refinery discharges and concluding that "[T]he Agency believes that the benefit of thus reducing the pollutants discharged justifies the associated costs ....(id.)." Section VI of the Development Document (R. 3181-90) is referenced as describing the environmental "harm" caused by such discharges, but that section only provides a general discussion of the pollutant parameters covered by the regulations.



Further justification was required by the recent decision in Appalachian Power Co. v. Train, supra, in remanding certain regulations establishing thermal discharge limitations for steam electric generating plants. The court held that (9 ERC at 1041):

...the agency must consider the benefits derived from the application of its effluent reduction requirements in relation to the associated costs in order to determine whether, in fact, the resulting progress is 'economically achievable,' and whether the progress is 'reasonable'.

Faced with the same EPA arguments on the difficulty of precisely quantifying benefits, the court observed that the real question is "whether the reduction results in reasonable further progress toward the elimination of pollutants" in the light of the huge expenditures required to achieve the reduction levels. The court held EPA had focused solely on the costs of each reduction level and had ignored the specific resulting environmental benefits in making comparisons with other alternative reduction levels.<sup>24/</sup>

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<sup>24/</sup> The opinion went on to indicate that EPA must identify tangible environmental benefits on the best information available, or state clearly why this cannot be done. The court refused to accept EPA's naked conclusions that actual benefits were in fact being achieved which justified the cost and effort involved. (Id. at 1042-43).

(a) Data Base and Total Economic Impact

The record in this action on these issues has been clouded from the outset because EPA has not fully disclosed the sources of its cost data or the bases of its assumptions in situations where predictions were made. On the "reasonableness" of the economic impact of the regulations on the cane sugar refinery industry, EPA has cited the "Economic Analysis of Proposed Effluent Limitations Guidelines" (October 1973) (R. 2484-2592) prepared by Development Planning and Research Associates. However, the analysis was premised on cost information relating to alternative treatment levels originally collected by EPA and later compiled in Supplement A to the Draft Development Document (R. 199-311). The consultant for that work, Environmental Science and Engineering, Inc., stated in its November 8, 1973, cover letter to EPA concerning Supplement A (R. 199):

A number of changes have been made in the Cane Sugar Refinery Report. Some of these changes have been as a result of the review process, some of your own judgment, and some have been corrections to the report on our part. This supplement does not reflect these changes. Since only you have a complete list of these changes and corrections, I suggest that you take a good close look at this supplement and include the changes and corrections before it is given to anyone as a reference, otherwise there may be some confusion.



There has never been issued a clarification fully explaining what all of these "judgmental" changes were. Supplement A represents estimates, some of which have been altered with handwritten notes, of the total cost of implementing alternative levels of treatment technology. The source of the individual materials and labor cost estimates is not provided. Hence, the origins of EPA's economic data for particular treatment alternatives remain a mystery.

In addition, EPA's economic analysis was predicated on 1971 dollars, rather than actual 1973-74 cost figures (Development Document 108; R. 3221). In remanding the grain processing limitations in CPC International v. Grain, supra, the Court viewed EPA's use of 1971 cost data as deficient. (515 F.2d at 1051).

The industry comments (R. 2975-3018), asserted repeatedly that both capital and operating costs appearing in Supplement A and the final Development Document were seriously understated.<sup>25/</sup> EPA's only response was that [t]he Agency has reexamined the cost data and finds that

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<sup>25/</sup> These criticisms were seconded by The Department of Commerce (R. 3020-22, 3028). Its comments objected in particular to the "slight-of-hand" by which EPA minimized economic impacts, noting EPA had given no explanation as to why the cost impact went down when the draft limitations were made more stringent, nor why certain qualifying statements of the economic consultant were deleted in the final report (R. 3021-22).

these data are accurate and substantiate the reasonableness of the proposed regulations." (39 Fed.Reg. at 10523, Comment 16). No effort was made to answer the industry contentions or to rebut the actual cost figures contained in the industry's submission. Clearly, if EPA had made modifications based on these later actual cost figures, it would have had a significant impact on EPA's overall cost analysis and possibly influenced its designation of the recommended treatment technologies for 1977 and 1983.

The USCSRA engaged an independent firm, Robert R. Nathan Associates, Inc., to analyze EPA's overall economic impact conclusions. While determining that EPA's methodology was "essentially sound," the report indicated that many of EPA's underlying assumptions were incorrect, including understatements of the cost of capital and land and plant salvage values, and overstatements of income, total investment, and cash flow (USCSRA Comments, Nathan Report at 7, 9, 13, 15; R. 2992, 2994, 2998, 3000). As regards total cost of implementing BPT and BAT, the Nathan Report concluded that BPT would cost treble the amount estimated by EPA (\$14,978,000 vs. \$5,557,000) and BAT, including BPT costs, would cost twice as much (\$37,621,000 vs. \$16,677,000). Similar discrepancies were noted respecting estimates of operating costs (*id.* at 21, R. 3006).



(b) BPT Cost Estimates

The technical analysis of EPA's proposed regulations (USCSRA Comments; R.2788-2974) went into more detail and, where possible, made comparisons of EPA's estimated costs for installation and operation of particular treatment alternatives with actual bids and purchases made within the industry for similar equipment. The analysis concluded that EPA's estimates were low on an overall basis by a factor of 2 or more, and attributed this to the agency's lack of familiarity with refinery practices (Id. at 6; R. 2794). A few examples suffice to document this conclusion.

The introduction to Supplement A stated regarding land acquisition costs for treatment facilities (R. 203): "While some cane fields in Louisiana may be assessed at less than a thousand dollars an acre, to discuss the worth of land in downtown Brooklyn or Boston is almost ludicrous." Yet, ignoring the predominantly urban location of over two-thirds of national refinery capacity, EPA arbitrarily used figures of \$1000 and \$1720/acre for land acquisition costs (R. 205). This action was subject to the following "qualifying statement" in the Development Document (at 109; R. 3222):

Land costs vary widely. The figures used herein are considered to be representative of non-urban areas where the use of land would be expected. In urban areas land is often not available; when it is used, the cost can be expected to be substantially higher than reported in this document.

The obvious conclusion is that the economic impact will be far greater than estimated by EPA. See American Iron and Steel Institute v. EPA, supra, 526 F.2d at 1076 (concurring opinion of Adams, J., regarding EPA's refusal to include land acquisition costs for "green field" treatment facility sites).

EPA understated the baseline waste loadings for its model refineries by assuming the preexistence of filter aid recycle systems, which most refineries lack; thus, the cost of implementing this sub-system, approximately \$500,000, was completely omitted from EPA's cost estimates (USCSRA Comments, App. F at 16; R. 2916).

In-plant labor costs are uniformly assessed at \$4/hour (R. 205), whereas refinery craft labor actually varied in 1974 from \$8-10/hour, and outside contractors in metropolitan areas were charging \$15 or more per hour. (USCSRA Comments, App. D at D-3-4; R.2871-72).

For particular equipment needed to improve entrainment reduction (external separators), the USCSRA Comments submitted actual quotations during 1972 for the



equipment identified by EPA which were 470 and 780 percent higher than the figures used by EPA (id., at D-10; R. 2878).

Operation of a biological plant requires the use of at least 6 pumps according to Supplement A at an estimated cost of \$5,246 (R. 223), as opposed to recent refinery purchases indicating actual costs approximately double this figure (USCSRA Comments, App. D at D-11, D-12; R. 2879-80).

Finally, EPA estimated the incremental costs for installation of a biological treatment plant as \$662,000 (1971 dollars) for its model 2100/ton per day refinery (Development Document 111; R. 3224). The C&H Crockett refinery (with a capacity of 4000 tons per day) has received bids and engineering studies indicating the total cost of such a plant will be \$5,500,000,<sup>26/</sup> or an amount equivalent to that estimated by EPA as sufficient to install BFT within the entire cane sugar refinery industry (Development Document 149; R. 3261).

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26/ Affidavit of Philip F. Meads, attached hereto in Appendix B. The total cost reflected in the bids is \$6,000,000, in contemplation of the plant treating community wastes of a local sewage district which will contribute 4% of the total BOD load to the plant. The design engineers were also requested to provide total costs excluding the municipal wastes in preparing their estimates, and this was the basis of the \$5.5 million figure for the refinery alone.

(c) BAT Cost Estimates

For 1983, EPA has designated as BAT the use of cooling towers to recycle the high volume barometric condenser cooling water with a blowdown to the biological treatment plant of 2% of that volume to remove the maximum of 10 mg/l of BOD.<sup>27/</sup> which may become entrained during the refining process. EPA predicted the incremental costs of such towers for a 2100 ton per day crystalline refinery would be \$714,000 (Development Document 113; R. 3226)<sup>28/</sup>, but did not provide a fully itemized breakdown of these costs which would permit detailed analysis and rebuttal. However, the USCSRA submission indicated a more realistic installation cost for such a tower would be between \$1 and 2 million. The comments attached an itemized accounting of these costs as extrapolated from actual costs at sugar installations and a current engineering study; the latter study estimated a total installation cost, excluding land, of \$1.9 million. (App. D at D-13 to D-17; R. 2881-85).<sup>29/</sup>

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<sup>27/</sup> See footnote 21, supra.

<sup>28/</sup> The earliest incremental cost estimate for this treatment level in Supplement A was \$659,005 (R. 227). Thus, the total was increased by only approximately \$55,000 after EPA received adverse comments on its estimates, and no explanation was provided for even this modest increase.

<sup>29/</sup> This figure also did not include the additional costs necessary to expand the biological plant to handle the cooling



As mentioned, EPA's response to criticisms of its BPT and BAT cost estimates was the cryptic statement that it had "reexamined" the data and found it "accurate" and supportive of the "reasonableness" of the regulations (39 Fed. Reg. at 10523). Absolutely no effort was made to indicate errors in the industry's estimates or to explain the major discrepancies in the competing figures.

These EPA predictions are perhaps the most striking example of the agency's general understatement of the economic impact of its recommended treatment technologies on the cane sugar refining industry. The cooling towers included as BAT are intended to control the minute concentrations (a maximum of 10 mg/l of BOD) entrained in the refinery cooling waters.<sup>30/</sup> As earlier discussed, the

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tower blowdown, nor the cost of new in-plant pumps and piping which would be required.

<sup>30/</sup> BPT for 1977 includes installation of entrainment minimizing equipment on refinery vacuum pans and evaporators which will reduce concentrations of BOD in the cooling water to 10 mg/l or less.

It is to date difficult to comprehend EPA's rigid concern over the maximum 10 mg/l BOD concentrations in refinery cooling waters in view of the agency's attitude towards other dischargers having tremendously higher total effluent flow rates. The 1977 standard for thousands of municipal treatment works across the nation requires secondary treatment achieving a maximum concentration of 30 mg/l, a figure as yet achieved by a minority of these plants. The 1983 requirement, as yet undefined, is to be based on the "best

towers will cause serious adverse environmental effects. Given these effects and the very large costs associated with the towers, the offsetting environmental and social benefits should be clearly evident in the record.<sup>31/</sup> Appalachian Power Co. v. Train, supra, 9 ERC at 1042-43.

However, it is apparent that EPA has wholly failed to demonstrate any tangible benefits to be realized from construction of cooling towers in terms of the capability of the receiving waters "to support healthy populations of wildlife, fish, and other aquatic wildlife," its suitability "for industrial, recreational, and drinking water supply uses (39 Fed.Reg. at 10524)," or other demonstrative factors. In the absence of such justification, the 1983 cooling tower requirement is difficult to accept as the rational recommendation of an official agency of the Federal

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practical waste treatment technology over the life of the works" (Section 301(b)(2)(B)). It is doubtful this standard will demand a 67 percent reduction to the 10 mg/l figure now imposed on cane sugar refineries.

<sup>31/</sup> This seems particularly appropriate in the case of C&H's Crockett refinery, since, despite consistent testing and monitoring, no "substantial and damaging impacts" have been discerned in the Carquinez Strait receiving waters. The BOD discharged has never caused the dissolved oxygen content to fall below 7 mg/l, a level well above the point which might be damaging to wildlife, and the concentration of TSS discharged is less than that found normally in the receiving waters. Affidavit of Philip F. Meads, attached hereto in the Appendix.



government. On the basis of the record herein, this Court should direct EPA to eliminate cooling towers completely as an alternative for achieving the 1983 limitations.

Conclusion

The Court should vacate and remand the challenged regulations, 40 C.F.R. Sections 409.22 and 409.23, to the Environmental Protection Agency.

Dated: August 31, 1976.

Respectfully submitted,

JOHN E. SPARKS  
PATRICK J. O'HERN  
BROBECK, PHLEGER & HARRISON

## APPENDIX A

Effluent Guidelines and Standards for the Liquid  
and Crystalline Cane Sugar Refining Subcategory of  
the Sugar Processing Point Source Category, 39 Fed.  
Reg. 10522-26 (March 20, 1974), amending 40 C.F.R.  
Chapter 1, Subchapter N, Part 409



## RULES AND REGULATIONS

### 40—Protection of the Environment CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

#### CHAPTER N—EFFLUENT GUIDELINES AND STANDARDS

#### 409—SUGAR PROCESSING POINT SOURCE CATEGORY

##### and Crystalline Cane Sugar Refining Subcategory

December 7, 1973, notice was published in the Federal Register (38 FR 10114) that the Environmental Protection Agency (EPA or Agency) was promulgating effluent limitations guidelines for point sources and standards of performance and pretreatment standards for existing sources within the crystalline cane sugar and liquid cane sugar refining subcategory of the sugar processing point source category.

The purpose of this notice is to establish effluent limitations guidelines for existing sources and standards of performance and pretreatment standards for new sources within the crystalline cane sugar and liquid cane sugar refining subcategory of the sugar processing point source category, by amending 40 CFR Chapter I, Subchapter N, Part 409, new subparts B and C. This final rule is promulgated pursuant to sections 301, 304 (b) and (c), 306 (b) and (c), and 307(c) of the Federal Water Pollution Control Act, as amended (the Act), 33 U.S.C. 1251, 1311, 1314 (b) and (c), 1316 (b) and (c), and 1317(c); 86 Stat. 883, Pub. L. 92-500. Regulations regarding cooling water intake structures for all categories of point sources under section 316(b) of the Act promulgated in 40 CFR Part 402. In addition, the EPA is simultaneously promulgating a separate provision which appears in the proposed rules section of the Federal Register, stating the applicability of the limitations and standards set forth in the notice of proposed rulemaking to users of publicly owned treatment works which are subject to treatment standards under section 301 of the Act. The basis of that promulgation is set forth in the actual notice of proposed rulemaking. The legal basis, methodology and conclusions which support promulgation of this regulation were set forth in detail in the notice of proposed rulemaking published August 6, 1973 (38 FR 21202) and in the notice of proposed rulemaking for the crystalline cane sugar refining subcategory and the liquid cane sugar refining subcategory. In addition, the regulations as proposed are supported by two other documents: a document entitled "Development of Effluent Limitations and New Source Performance Standards for the Cane Sugar Refining Segment of the Sugar Processing Point Source Category" (December 1973) and (2) the document entitled "Analysis of Proposed Effluent Limitations and Availability of Biological Treatment of Sugar Refining Process Water in conjunction with blowdown from cooling water recycle systems followed by sand filtration (BATEA), stating that it has not been physically demonstrated.

Interested persons were invited to participate in the rulemaking by submitting written comments within 30 days from the date of publication. Prior public participation in the form of solicited comments and responses from the States, Federal agencies, and other interested parties were described in the preamble to the proposed regulation. The EPA has considered carefully all of the comments received and a discussion of these comments with the Agency's response thereto follows.

The regulation as promulgated contains minor but significant departures from the proposed regulation. The following discussion outlines the reasons why these changes were made and why other suggestions were not adopted.

(a) *Summary of comments.* The following responded to the request for written comments contained in the preamble to the proposed regulation: U.S. Department of Commerce, U.S. Water Resources Council, California and Hawaiian Sugar Company, United States Cane Sugar Refiners' Association, Tate and Lyle Technical Services, Ltd., Amstar Sugar Corporation, Imperial Sugar Company, State of Hawaii, and the Effluent Standards and Water Quality Information Advisory Committee.

Each of the comments received was carefully reviewed and analyzed. The following is a summary of the significant comments and the Agency's response to those comments.

(1) Several commenters raised no objection to the guidelines as proposed.

(2) One commenter questioned the subcategorization into liquid and crystalline refining, and the more stringent standards laid down for crystalline cane sugar refineries.

The guidelines are actually more stringent (lower numbers, higher treatment efficiency) for liquid refining. These are two distinct unit operations with correspondingly different raw waste loads and water usage. Data pertaining to water usage and raw waste loadings further substantiate the subcategorization.

(3) Several commenters stated that the practicability of biological treatment of refinery wastes has not yet been demonstrated.

It is true that no member of the cane sugar refining subcategory is presently employing the technology described as BPCTCA. However, the technology itself is widely available and practiced in other industries with similar raw waste characteristics—for example, the grain milling and the citrus and potato industries. There are no characteristics of the refinery waste waters that would render them untreatable by the biological treatment system described.

(4) One commenter questioned the achievability and availability of biological treatment of sugar refining process water in conjunction with blowdown from cooling water recycle systems followed by sand filtration (BATEA), stating that it has not been physically demonstrated.

This is proven technology, currently being practiced within the grain milling, the oil refining, and the soaps and detergents industries. Although the economic situation of the industry precludes the establishment of this technology as BPCTCA, it has been so thoroughly demonstrated that there is little doubt that it can be utilized by 1983 within this industry segment. The technology upon which BATEA is established is proven and has been studied in terms of an economic impact analysis and found to be acceptable.

(5) Several commenters expressed the opinion that the effluent guidelines should be established as net rather than gross limitations.

It was the intention of the proposed effluent limitations guidelines (BPCTCA) that the barometric condenser cooling water stream be handled as net (the addition of pollutants). This is because for BPCTCA, control of entrained BOD<sub>5</sub> in condenser water rather than treatment is specified. The regulations have been modified to better reflect their intentions, including a separate set of regulations for those refineries which discharge barometric condenser cooling water only. For BPCTCA for both subcategories, the basis of the effluent limitations guidelines is as follows. The BOD<sub>5</sub> limitation is determined by the addition of the net BOD<sub>5</sub> attributed to the barometric condenser cooling water together with that amount of BOD<sub>5</sub> attributed to the treated process water. The TSS limitation is that amount of TSS attributed to the treated process water. Where the barometric condenser cooling water and process water streams are mixed and impossible to measure separately prior to discharge, the values should be considered net.

The pollutant levels established for the process water stream for BPCTCA, for BATEA, and for new source performance standards for both the crystalline and liquid subcategories reflect values which should not be exceeded because treatment of the entire waste stream is specified. Treatment produces a relatively constant effluent regardless of influent concentration.

(6) The comment was made that the ratio of maximum daily to average monthly limits is far too liberal.

Further analysis of activated sludge treatment systems handling similar waste streams to cane sugar refining process waters was accomplished. Based on engineering judgment and experience with similar waste treatment systems in other industrial categories the following ratios of daily maximum to monthly average limitations are established. Barometric condenser cooling water will be three (3) times the monthly average for BOD<sub>5</sub> for both subcategories. Process water will be two (2) times the monthly average for BOD<sub>5</sub> and three (3) times the monthly average for TSS for both subcategories.

(7) It was recommended that effluent limitations be established for settleable

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rather than for total suspended solids (TSS).

Solids, unlike TSS, does not measure the treatment efficiency of a treatment system. There are no measurable settleable solids, effluent from a secondary clarifier in a biological treatment system would be meaningless to establish a standard for a parameter which measures the degree of treatment achieved by the treatment system. It is recommended that the BOD5 limitation (BPCTCA) be based on effluent concentration ranging from 10 mg/l from the biological treatment for both the crystalline and the sugar refining subcategories. Effluent levels from treatment of water by an activated sludge or biological treatment system have been modified so that effluent levels of 60 mg/l BOD5 and TSS and liquid cane series are required to meet effluent of 100 mg/l for both BOD5. These levels are approximately the same in the proposed regulation. Application of the guidelines is required no one currently operates a system to treat refinery effluent. EPA continues to believe that a designed and operated system could be described would meet the standards set forth in the proposed guidelines. The revision of the limitations is not intended to require a lesser degree of treatment. The system should be used, and the system should be designed so as to achieve the proposed guidelines. The revision is only to take into account operational problems which might be encountered in adapting the specified technology to this industry.

A commenter questioned the use of cooling towers as a part of BATEA at a barometric condenser discharge of 24,000,000 gallons per day of BOD5 is better than 100 mg/l per day at 30 mg/l (or 100 mg/l) and corresponding BOD5 reduction resulting from the biological treatment of the cooling tower blowdown.

Use of cooling towers and subsequent biological treatment of the blowdown results in a reduction by 90% of BOD5 reaching the receiving body. EPA policy is that dilution is a suitable form of treatment. By using this waste stream in a small blowdown stream, it is easily and cheaply treatable biologically. This is "practicable" technology used in the oil refining, grain and soap and detergents industries. Some segments of the cane refining industry practice the barometric condenser cooling discharge of the cooling tower effluent to municipal treatment systems or impoundage lagoons.

A commenter questioned the limitations proposed for BATEA stating the limitations were not con-

sistent with EPA's definition of "secondary treatment".

The guidelines for BATEA need not be consistent with the "secondary treatment" definition under section 304(d) of the Act. Instead, they must meet the requirements set forth in section 304(b) of the Act.

(11) One commenter felt that while sand filtration is mentioned as the BATEA, this should not preclude the use of other polishing methods to meet the standards. The Agency has not required any treatment method to be employed by industry to achieve the guidelines. Many other polishing methods exist and the guidelines may be achieved by means other than those specified in the development document.

(12) It was recommended that BOD5 under the BATEA be limited to 0.16 lb/ton, or double the proposed limitation, based on a lesser treatment efficiency.

The expected degree of treatment based on the BATEA has been re-evaluated and modified. Based on improved operation of the properly designed biological treatment system, effluent BOD5 levels of 40 mg/l for the model crystalline and 75 mg/l for the model liquid cane sugar refinery are determined to be realistic. No credit for BOD5 removal with the solids removed in the sand polishing operation is assumed. This is because of the uncertainty at present of the ratio of soluble to insoluble BOD5 in the effluent from the biological treatment system.

(13) The comment was made that the raw waste load baseline value with regard to filter cake slurry assumed the universal installation of filter aid recycle systems.

Upon re-analysis of the filter cake slurry stream, it was found that a calculational error appeared in the development document. Because the proposed guidelines are based on the complete retention with no allowable discharge of this stream, no change in the allowable effluent discharge results.

(14) Various commenters stated that the assumed barometric flows are either too low or too high.

The barometric condenser water flows designed for in the development document have the following bases: (1) Average flows were based on an average of all reliable flow information available, and (2) Model flows were based on the average flows of those refineries deemed to be exemplary in terms of BOD5 entrainment control.

In any event, the amount of BOD entrained is not a function of flow rate, but of sucrose carry-over. The model flows are technically sound for the basis of guidelines establishment and the development of cost data.

(15) One commenter objected to the statement that the investment costs associated with hook-up to a municipal treatment system are zero.

This assumption was made and applied only to those facilities which currently have hook-up. Therefore, the incremen-

tal investment cost is zero for these refineries.

(16) The comment was made that the capital and operating costs of treatment appear to be understated.

The Agency has reexamined the cost data and finds that these data are accurate and substantiate the reasonableness of the proposed regulations.

(17) The comment was made that the energy required to treat wastes and operate cooling towers will add a burden to our present crisis.

It has been estimated that the additional energy to achieve the BPCTCA limitations ranges from between 0.6 and 0.84 percent of the current industry energy usage. To achieve the BATEA limitations, the estimated additional energy required ranges from between 1.6 and 6.1 percent of the current industry energy usage. These energy requirements were reviewed by the Agency and judged to be not excessive.

(18) The comment was made that cooling towers sometimes cause fogging and noise problems.

For some locations, some of the time, these problems may be encountered. However, through proper design these effects can be minimized.

(19) The State of Hawaii stated that they are opposed to the installation of a cooling tower at a refinery in Aiea, Hawaii. The State would want to review the alternative of reclaiming the refinery's barometric condenser cooling water stream through the irrigation of public parks and recreational facilities in the area.

The EPA's guidelines limit only the quantity and quality of the pollutants which may be discharged. Dischargers may employ any technology, including land disposal or other alternatives, which will result in compliance with such limitations.

(20) The comment was made that settled activated bacterial sludge is very dilute, and its disposal is not simply a matter of landfill.

There are many ways in which settled activated bacterial sludge may be handled—sludge thickening, rotary vacuum filtration, centrifugation, sludge drying—with the resulting solids either landfilled or used as a soil supplement.

(21) The State of Hawaii recommended that the implementation of the proposed effluent limitations guidelines be postponed until the energy requirements are clearly known and fuel allocations for these purposes assured.

These guidelines are not self-executing, but must be implemented through NPDES permits. Under the Act, BPCTCA must be achieved by July 1, 1977. However, in permit issuance, such factors as fuel allocations and availability may be taken into account in specifying specific compliance dates prior to that time. As previously indicated, the energy requirements associated with the required technology are not excessive.

(22) One commenter objected to the assumptions in the economic impact analysis regarding the cost of capital.



## RULES AND REGULATIONS

average values, and plant salvage

The Agency has reviewed these assumptions used in the economic impact analysis and found them to be substantiated. The cost of capital used in the analysis is based upon the rate of return experienced in this particular industry rather than the rate of return for the food processing industry. Any savings in land and plant salvage are determined to be insignificant in the economic impact analysis. *Revision of the proposed regulation to promulgate.* As a result of comments and continuing review of the proposed regulation, the EPA, the following changes have been made in the regulation.

The effluent levels from treatment of waste water by an activated sludge or other biological treatment system (CTCA) have been modified so that effluent levels for both BOD<sub>5</sub> and TSS and liquid cane sugar refineries are required to meet effluent levels of 40 mg/l for both BOD<sub>5</sub> and TSS.

The effluent levels are approximately double those in the proposed regulation. The revision of the guidelines is required so that one currently operates a biological treatment system to treat refinery wastes. The Agency continues to believe that a properly designed and operated system of the type described would meet the limitations set forth in the proposed guidelines. The revision of the limitations in the final regulation is not intended to allow any degree of treatment. The same system should be used, and the system should be designed so as to achieve the effluent guidelines. The revision is intended to take into account operational problems which might be encountered in adapting the specified technology to the industry.

The effluent levels for BOD<sub>5</sub> resulting from the application of BATEA have been modified.

For improved operation of the designed biological treatment system, effluent BOD<sub>5</sub> levels of 40 mg/l for crystalline and 75 mg/l for liquid cane sugar refineries are determined to be realistic.

Credit for BOD<sub>5</sub> removal with the removal in the sand polishing operation is assumed. This is because of the difficulty at present of the ratio of the insoluble BOD<sub>5</sub> in the effluent to the biological treatment system.

Based on an analysis of biological treatment systems operating on wastes in nature to cane sugar refining and on engineering judgment, the average ratios of daily maximum to average limitations are established.

The metric condenser cooling water discharge is three (3) times the monthly average BOD<sub>5</sub> for both subcategories.

The effluent water will be two (2) times the average for BOD<sub>5</sub> and three (3) times the monthly average for TSS for both subcategories.

Section 304(b)(1)(B) of the Act requires for "guidelines" to implement

the uniform national standards of Section 301(b)(1)(A). Thus Congress recognized that some flexibility was necessary in order to take into account the complexity of the industrial world with respect to the practicability of pollution control technology.

In conformity with the Congressional intent and in recognition of the possible failure of these regulations to account for all factors bearing on the practicability of control technology, it was concluded that some provision was needed to authorize flexibility in the strict application of the limitations contained in the regulation where required by special circumstances applicable to individual dischargers.

Accordingly, a provision allowing flexibility in the application of the limitations representing best practicable control technology currently available has been added to each subpart, to account for special circumstances that may not have been adequately accounted for when these regulations were developed.

(c) *Economic impact.* The above listed changes will not significantly affect the conclusions of the economic study prepared for the proposed regulations. In addition, it has been learned that one cane sugar refinery considered to be impacted, under the assumption that a complete treatment system for treating its process waste water stream was necessary, is no longer impacted. The projected availability of a municipal treatment system at a reasonable initial and operational cost precludes the previously expected economic impact.

(d) *Cost-benefit analysis.* The detrimental effects of the constituents of waste waters now discharged by point sources within the cane sugar refining segment of the sugar processing point source category are discussed in Section VI of the report entitled "Development Document for Effluent Limitations Guidelines for the Cane Sugar Refining Segment of the Sugar Processing Point Source Category" (March 1974). It is not feasible to quantify in economic terms, particularly on a national basis, the costs resulting from the discharge of these pollutants to our Nation's Waterways. Nevertheless, as indicated in Section VI, the pollutants discharged have substantial and damaging impacts on the quality of water and therefore on its capacity to support healthy populations of wildlife, fish and other aquatic wildlife and on its suitability for industrial, recreational and drinking water supply uses.

The total cost of implementing the effluent limitations guidelines includes the direct capital and operating costs of the pollution control technology employed to achieve compliance and the indirect economic and environmental costs identified in Section VIII and in the supplementary report entitled "Economic Analysis of Proposed Effluent Guidelines, Cane Sugar Refining Industry" (October, 1973). Implementing the effluent limitations guidelines will substantially reduce the environmental harm which would otherwise be attributable to the continued discharge of polluted waste waters

from existing and newly constructed plants in the cane sugar refining industry.

The Agency believes that the benefit of thus reducing the pollutants discharged justifies the associated costs which, though substantial in absolute terms, represent a relatively small percentage of the total capital investment in the industry.

(e) *Publication of information on processes, procedures, or operating methods which result in the elimination or reduction of the discharge of pollutants.* In conformance with the requirements of Section 304(c) of the Act a manual entitled, "Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Cane Sugar Refining Segment of the Sugar Processing Point Source Category," has been published and is available for purchase from the Government Printing Office, Washington, D.C., 20401 for a nominal fee.

### FINAL RULEMAKING

In consideration of the foregoing, 40 CFR Chapter I, Subchapter N, Part 409 is amended by adding Subparts B and C to read as set forth below. This final regulation is promulgated as set forth below and shall be effective May 20, 1974.

Dated: March 12, 1974.

RUSSELL E. TRAIN,  
Administrator.

#### Subpart B—Crystalline Cane Sugar Refining Subcategory

- |        |   |
|--------|---|
| Sec.   |   |
| 409.20 | Applicability: description of the crystalline cane sugar refining subcategory.  |
| 409.21 | Specialized definitions.  |
| 409.22 | Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available. |
| 409.23 | Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.       |
| 409.24 | [Reserved]  |
| 409.25 | Standards of performance for new sources.   |
| 409.26 | Pretreatment standards for new sources.   |

#### Subpart C—Liquid Cane Sugar Refining Subcategory

- |        |   |
|--------|---|
| 409.30 | Applicability: description of the liquid cane sugar refining subcategory.   |
| 409.31 | Specialized definitions.  |
| 409.32 | Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available. |
| 409.33 | Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.       |
| 409.34 | [Reserved]  |
| 409.35 | Standards of performance for new sources.   |
| 409.36 | Pretreatment standards for new sources.   |

Part B—Crystalline Cane Sugar Refining Subcategory

Applicability: description of crystalline cane sugar refining category.

Provisions of this subpart are applicable to discharges resulting from the refining of raw cane sugar into crystallized sugar.

Specialized definitions.

The purpose of this subpart: Except as provided below, the general definitions, abbreviations and meth- analysis set forth in Part 401 of this chapter shall apply to this subpart. Net shall mean the addition of pollutants. Treated shall mean that amount of material (raw sugar) contained in aqueous solution at the beginning of the process for production of refined sugar.

Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available,

in establishing the limitations set forth in this section, EPA took into account information it was able to collect and develop and solicit with respect to (such as age and size of plant, materials, manufacturing processes, waste produced, treatment technology, energy requirements and other factors which can affect the industry subcategory and effluent levels established). It is, however, possible that data not available and, as a result, these limitations should be adjusted for certain factors in this industry. An individual owner or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has authority to issue NPDES permits) that factors relating to the equipment, facilities involved, the process or other such factors related to the discharge are fundamentally different from the factors considered in the development of the guidelines. On the basis of such evidence or other available information the Regional Administrator (State) will make a written finding as to whether such factors are or are not fundamentally different for that facility from those specified in the Permit Document. If such fundamentally different factors are found to exist, the Regional Administrator or State shall establish for the facility effluent limitations in the permit either more or less stringent than the limitations established in the guidelines to the extent dictated by such factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, or other limitations, or initiate proceedings to revise these regulations.

(b) The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(1) Any crystalline cane sugar refinery discharging both barometric condenser cooling water and other process waters shall meet the following limitations. The BOD<sub>5</sub> limitation is determined by the addition of the net BOD<sub>5</sub> attributed to the barometric condenser cooling water to that amount of BOD<sub>5</sub> attributed to the treated process water. The TSS limitation is that amount of TSS attributed to the treated process water. Where the barometric condenser cooling water and process water streams are mixed and impossible to measure separately prior to discharge, the values should be considered net.

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Metric units (kilograms per 1,000 kg of melt)		
BOD <sub>5</sub> .....	1.10	0.43
TSS.....	.27	0.00
pH.....	Within the range 6.0 to 9.0.	
English units (pounds per ton of melt)		
BOD <sub>5</sub> .....	2.20	0.95
TSS.....	.54	.18
pH.....	Within the range 6.0 to 9.0.	

(2) Any crystalline cane sugar refinery discharging barometric condenser cooling water only should be required to achieve the following net limitations:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Metric units (kilograms per 1,000 kg of melt)		
BOD <sub>5</sub> .....	1.02	0.34
English units (Pounds per ton of melt)		
BOD <sub>5</sub> .....	2.04	0.68

§ 409.23 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best available technology economically achievable:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Metric units (kilograms per 1,000 kg of melt)		
BOD <sub>5</sub> .....	0.18	0.09
TSS.....	.11	.035
pH.....	Within the range 6.0 to 9.0.	
English units (pounds per ton of melt)		
BOD <sub>5</sub> .....	0.36	0.18
TSS.....	.21	.07
pH.....	Within the range 6.0 to 9.0.	

§ 409.24 [Reserved]

§ 409.25 Standards of performance for new sources.

The following standards of performance establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a new source subject to the provisions of this subpart:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Metric units (kilograms per 1,000 kg of melt)		
BOD <sub>5</sub> .....	0.18	0.09
TSS.....	.11	.035
pH.....	Within the range 6.0 to 9.0.	
English units (pounds per ton of melt)		
BOD <sub>5</sub> .....	0.36	0.18
TSS.....	.21	.07
pH.....	Within the range 6.0 to 9.0.	

§ 409.26 Pretreatment standards for new sources.

The pretreatment standards under section 307(c) of the Act for a source within the crystalline cane sugar refining subcategory, which is a user of a publicly owned treatment works (and which would be a new source subject to section 306 of the Act, if it were to discharge pollutants to the navigable waters), shall be the standard set forth in Part 128 of this chapter, except that, for the purpose of this section, § 128.133 of this chapter shall be amended to read as follows:

In addition to the prohibitions set forth in 40 CFR 128.131, the pretreatment standard for incompatible pollutants introduced into a publicly owned treatment works shall be the standard of performance for new sources specified in 40 CFR 409.25; *Provided*, That, if the publicly owned treatment works which receives the pollutants is committed, in its NPDES permit, to remove a specified percentage of any incompatible pollutant, the pretreatment standard applicable to users of such treatment works shall, except in the case of standards providing for no discharge of pollutants, be correspondingly reduced in stringency for that pollutant.



## RULES AND REGULATIONS

### Part C—Liquid Cane Sugar Refining Subcategory

#### § 409.30 Applicability; description of the liquid cane sugar refining subcategory.

The provisions of this subpart are applicable to discharges resulting from the processing of raw cane sugar into liquid cane sugar.

#### § 409.31 Specialized definitions.

The purpose of this subpart:

Except as provided below, the general definitions, abbreviations and methodology set forth in Part 401 of this chapter shall apply to this subpart. Net shall mean the addition of pollutants.

Melt shall mean that amount of material (raw sugar) contained in an aqueous solution at the beginning of the process for production of refined sugar.

#### § 409.32 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect and solicit with respect to (such as age and size of plant, materials, manufacturing processes, products produced, treatment technology available, energy requirements and which can affect the industry subcategory and effluent levels established. It is, however, possible that data would affect these limitations have been available and, as a result, these limitations should be adjusted for circumstances in this industry. An individual discharger or other interested party submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the effluent or facilities involved, the process, or other such factors related to the discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written determination that such factors are or are not fundamentally different for that facility from those specified in the Denial Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit more or less stringent than the limitations established herein, to the extent justified by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, initiate proceedings to revise the limitations.

(b) The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(1) Any liquid cane sugar refinery discharging both barometric condenser cooling water and other process waters shall meet the following limitations. The BOD<sub>5</sub> limitation is determined by the addition of the net BOD<sub>5</sub> attributed to the barometric condenser cooling water to that amount of BOD<sub>5</sub> attributed to the treated process water. The TSS limitation is that amount of TSS attributed to the treated process water. Where the barometric condenser cooling water and process water streams are mixed and impossible to measure separately prior to discharge, the values should be considered net.

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Metric units (kilograms per 1,000 kg of melt)		
BOD <sub>5</sub> .....	0.78	0.32
TSS.....	.50	.17
pH.....	Within the range 6.0 to 9.0.	
English units (pounds per ton of melt)		
BOD <sub>5</sub> .....	1.56	0.68
TSS.....	.99	.33
pH.....	Within the range 6.0 to 9.0.	

(2) Any liquid cane sugar refinery discharging barometric condenser cooling water only shall meet the following net limitations:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Metric units (kilograms per 1,000 kg of melt)		
BOD <sub>5</sub> .....	0.45	0.18
English units (pounds per ton of melt)		
BOD <sub>5</sub> .....	0.99	0.39

#### § 409.33 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best available technology economically achievable:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Metric units (kilograms per 1,000 kg of melt)		
BOD <sub>5</sub> .....	0.30	0.18
TSS.....	.09	.03
pH.....	Within the range 6.0 to 9.0.	
English units (pounds per ton of melt)		
BOD <sub>5</sub> .....	0.60	0.30
TSS.....	.18	.06
pH.....	Within the range 6.0 to 9.0.	

#### § 409.34 [Reserved]

#### § 409.35 Standards of performance for new sources.

The following standards of performance establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a new source subject to the provisions of this subpart:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Metric units (kilograms per 1,000 kg of melt)		
BOD <sub>5</sub> .....	0.30	0.15
TSS.....	.09	.03
pH.....	Within the range 6.0 to 9.0.	
English units (pounds per ton of melt)		
BOD <sub>5</sub> .....	0.60	0.30
TSS.....	.18	.06
pH.....	Within the range 6.0 to 9.0.	

#### § 409.36 Pretreatment standards for new sources.

The pretreatment standards under section 307(c) of the Act for a source within the liquid cane sugar refining subcategory, which is a user of a publicly owned treatment works (and which would be a new source subject to section 306 of the Act, if it were to discharge pollutants to the navigable waters), shall be the standard set forth in Part 128 of this chapter, except that, for the purpose of this section, § 128.133 of this chapter shall be amended to read as follows:

In addition to the prohibitions set forth in 40 CFR 128.131, the pretreatment standard for incompatible pollutants introduced into a publicly owned treatment works shall be the standard of performance for new sources specified in 40 CFR 409.35; *Provided*, That, if the publicly owned treatment works which receives the pollutants is committed, in its NPDES permit, to remove a specified percentage of any incompatible pollutant, the pretreatment standard applicable to users of such treatment works shall, except in the case of standards providing for no discharge of pollutants, be correspondingly reduced in stringency for that pollutant.

[FR Doc. 74-6234 Filed 3-19-74; 8:45 am]

APPENDIX B

Affidavit of Philip F. Meads, Ph.D.

August 31, 1976.



AFFIDAVIT OF PHILIP F. MEADS, Ph.D.

STATE OF CALIFORNIA       )  
                                  ) ss.  
COUNTY OF CONTRA COSTA )

PHILIP F. MEADS, being duly sworn, deposes and  
says:

1. I am currently and have been since 1972  
Assistant to the Refinery Manager - Environmental Affairs  
at the Crockett refinery of the California and Hawaiian  
Sugar Company (C&H). I was Technical Director from 1959  
to 1972 and Chief Chemist from 1953 to 1959 at the Crockett  
refinery.

2. In these capacities, I have had major respon-  
sibility for the planning and development of pollution abate-  
ment installations required to meet effluent limitations pre-  
scribed in the NPDES permit issued to the Crockett refinery  
(No. CA 000 5240) by the California Regional Water Quality  
Control Board, San Francisco Bay Region. These limitations  
are derived directed from those promulated by the Environmental  
Protection Agency (EPA) in its Effluent Limitations Guidelines  
for the Cane Sugar Refining Segment of the Sugar Processing  
Point Source Category, 39 Fed.Reg. 10522, 10525 (March 20, 1974).

3. In order to meet these limitations on biological oxygen demand ("BOD") in the refinery's effluents, C&H has been required to build a biological treatment plant (activated sludge) for its process wastes. The cost of this plant was estimated by the design engineers, Engineering-Science, Inc., at \$7,500,000 in the summer of 1975. However, when construction bids and equipment quotations were received and contracts awarded and purchase orders placed, the total cost now will be \$6,000,000. This cost may be briefly itemized as follows:

Plant construction (firm):	\$ 3,167,000
Equipment purchased by C&H (firm):	<u>1,477,200</u>
	\$ 4,645,000
Remaining items (estimated):	<u>1,355,000</u>
	\$ 6,000,000

The remaining necessary items include a power supply, an outfall, sludge handling equipment, engineering, and contingencies.

4. This plant was designed to treat a local community's domestic wastes jointly with C&H's process wastes. The community will contribute an estimated 4% of the BOD load to the plant. The plant will consist of the following major items:

- A. A 3.5 million gallon surge or equalization tank (required to maintain flow through the plant during the refinery's biweekly four-day shutdowns).



- B. Three 1 million gallon aerating basins.
- C. Two 40 ft. diameter flotation clarifiers.
- D. Six deep bed filters, 288 sq. ft. total surface area, 5 ft. deep.
- E. Two chlorinators - dechlorinators, 35 min. contact time for chlorine and 9 min. for sulfur dioxide at peak flow.
- F. One 1 million gallon aerobic sludge digester.
- G. Two solid bowl centrifuges to dewater digested sludge.

The chlorinators - dechlorinators are required to disinfect the domestic sludge. The deep-bed filters are cost-effective in reducing chlorine demand.

5. The design engineers estimated that the cost of this plant to treat solely C&H wastes would be approximately \$500,000 less or \$5,500,000. This reduced cost would include the elimination of the filters and disinfecting equipment as well as minor changes in sizes of other equipment.

6. I am responsible for the discharge self-monitoring program operated by C&H. C&H process wastes now discharge to the Carquinez Strait. The only pollutant these wastes carry above the limits established by EPA for 1977 is BOD, which operates to reduce the dissolved oxygen content of the receiving waters. Dissolved oxygen levels below 5 mg/l

are reported to be harmful to some fish. The receiving water standard (established by the Water Quality Control Plan for the San Francisco Bay Basin, adopted April 1975) at the Crockett refinery location is 7 mg/l dissolved oxygen, although a short distance west, the standard becomes 5 mg/l.

7. The dissolved oxygen content of the receiving water at the Crockett refinery is almost invariably above 7 mg/l in spite of the discharge of C&H's wastes containing BOD. When the new treatment plant is in operation, the improvement in the quality of the receiving water will not be detectable. The oxygen contents of the receiving waters are measured at several locations several times a month. These are reported monthly to the California Regional Water Quality Control Board, San Francisco Bay Region, and are a matter of public record.

8. The receiving waters carry naturally a significant amount of suspended material, caused by the winter and spring run-off and by wave action in the shallow parts of the receiving water system throughout the year. C&H wastes generally contain lower quantities of suspended solids than the receiving waters.

9. I have been in contact with Mr. Colin Houston and Mr. James Flynn of the firm of Colin A. Houston & Associates,

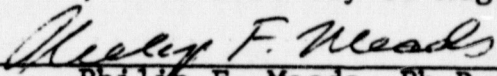


who have represented that their firm is under contract to EPA to review the bases and economic impact of EPA's 1983 effluent limitations for cane sugar refineries. I have supplied data on our Crockett refinery wastewaters, the costs of our treatment plant, and the results of a feasibility study for a cooling tower installation at Crockett to the Colin A. Houston firm as requested for its study.

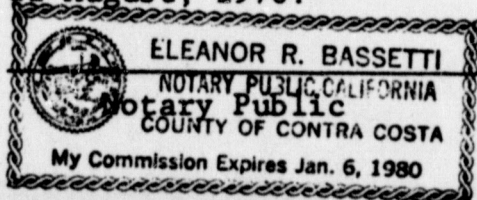
10. I was informed that the Colin A. Houston report initially was to have been completed in draft form in June of this year, with a date for final completion of July 1, 1976. I have since been informed that the report will not be submitted until sometime in September.

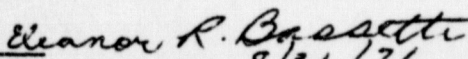
11. A cooling tower study completed in July 1973 showed the costs for a cooling tower system at the Crockett refinery to recycle cooling water would be about \$1,900,000 (1973 dollars) with annual operating and maintenance costs of \$470,000, including capital recovery. These costs did not include those required for the biological treatment of the cooling tower blowdown or for piping and pumping modifications required to handle the increased volume of cooling water necessitated by the recycling system.

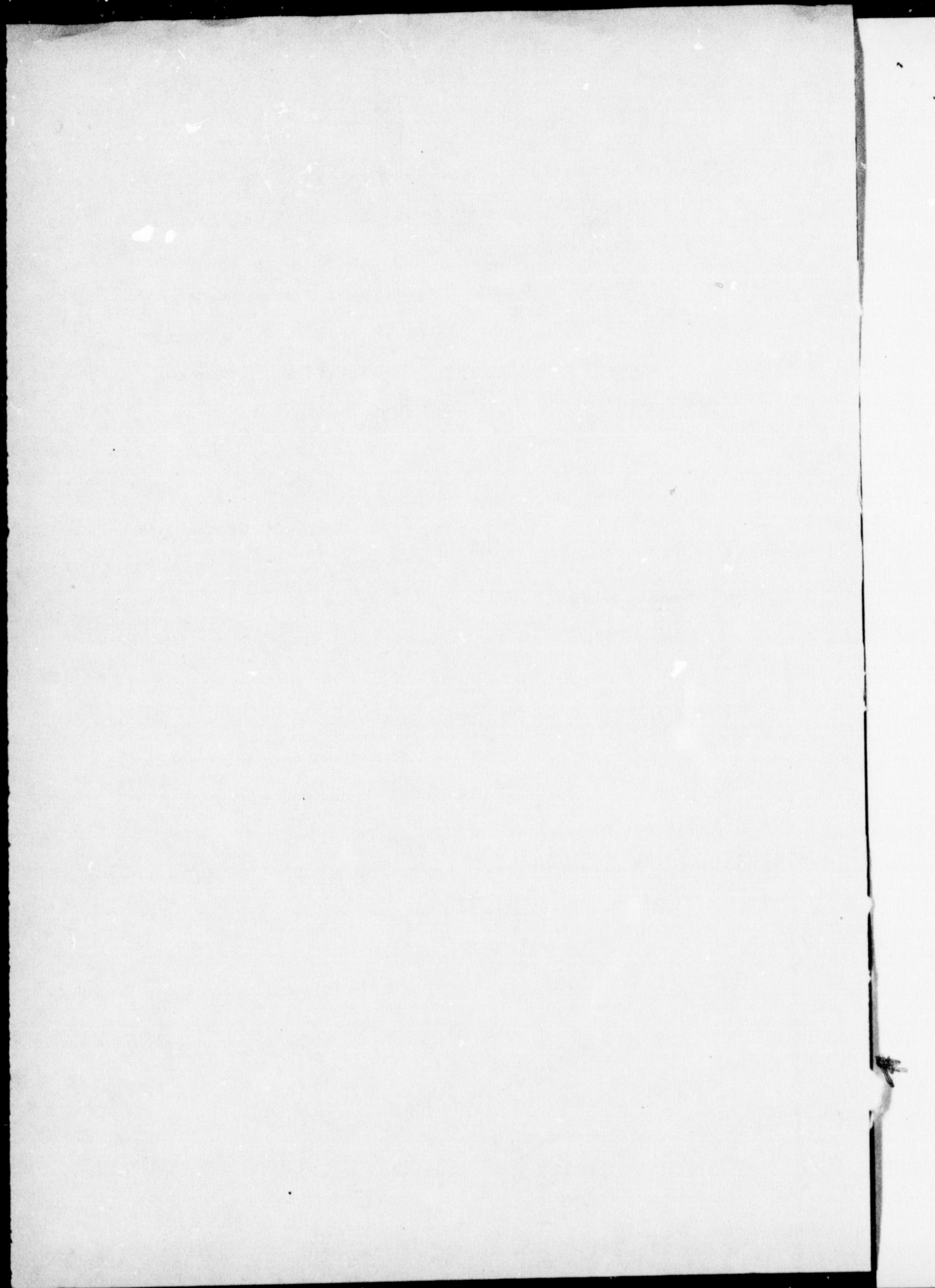
Executed at Crockett, Ca., this 31st day of August, 1976.

  
Philip F. Meads, Ph.D.

Subscribed and sworn to  
before me this 31st day  
of August, 1976.



  
8/31/76





CERTIFICATE OF SERVICE

I hereby certify that two (2) copies of the Opening Brief of petitioner California and Hawaiian Sugar Company and one copy of petitioner's designation of portions of the record to be included in a Joint Appendix were mailed, postage prepaid, on August 31, 1976, to:

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